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Cover: **A Chinook overflies the Panama Canal. Read the series about the diverse mission of the 210th CAB in Latin America beginning on page 2. Illustration by Paul Fretts**

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Honorable John O. Marsh Jr.
Secretary of the Army

Richard K. Tierney
Editor

The mission of the *U.S. Army Aviation Digest (USPS 415-350)* is to provide information of an operational, functional nature concerning safety and aircraft accident prevention, training, maintenance, operations, research and development, aviation medicine and other related data.

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ARMY AVIATION in Latin America is our featured topic of this issue; and Lieutenant General Wallace H. Nutting, commander in chief, U.S. Southern Command, leads off with his perspective of our mission there. The principal aviation element of the command is the 210th Combat Aviation Battalion (CAB) of the 193d Infantry Brigade (Panama), long recognized as a super outfit with a multifaceted operational as well as training mission.

Major Mark A. Ison provides an overall look at the unique jungle and coastal environment in which the battalion operates and the varied missions it performs with his "Battle Line the Sky." He highlights the daily challenges which dictate stringent training requirements to ensure mission accomplishment. For instance, in "Knights Train for the Night" we learn about a dedicated program to teach the proper use of night vision goggles so that night operations will not be "an exercise in terror." The authors of this very informative article are Chief Warrant Officer, CW3, Owen D. Scruggs and Major Frank L. Carson.

Likewise, the battalion's Chinook crews are "constantly learning and searching for new and different ways" to satisfy the wide ranging task of providing "CH-47 Operations in Central and South America." Captain Dennis Patrick, CW4 John Robinson and CW3 Tom Susi have written with pride of their unit's efforts. While flight operations across national boundaries are an everyday occurrence, so must maintenance be accomplished under similarly unique conditions. Captain G. D. Muse has put pen to paper to tell us about "Maintenance, Latin American Style."

And for Army Aviation operations in the Southern Command—and everywhere else—the admonitions offered by Staff Sergeant Bill Hawkins in "Pilot Error—Human Error" apply across the board. His theme is one we have heard before, and it deserves articulation again: A great responsibility rests on us in the aviation field—a responsibility for safe, prudent operations. Sergeant Hawkins then warns of the disasters that result when that responsibility is not fully accepted.

Unfortunately, it is also timely and almost prophetic that an article dealing with SSG Hawkins' topic of flight safety should appear in this, our final *Digest* issue of fiscal year (FY) 1982. Through the end of August there have been 49 Class A aircraft accidents, with 35 involving crew or supervisory—or "human"—error. Further, the cited mishaps have resulted in 33 fatalities and an accident rate of 3.33 per 100,000 flying hours. This is our poorest year since we began using the current classification system of Class A-E accidents in 1977, with yet another month to be added to those statistics! As this issue goes to press in early September, we have experienced **ELEVEN** more—bringing the FY 82 total to 60.

For the third month in a row, I have directed the closing remarks of this column to safety, or perhaps I should say the lack of it. While you may think it tedious or repetitious to hear it time and again, it is obvious that the safety message and the concern it conveys still has not gotten across. It is even more tedious and even more distressful for me to read recurring reports of needless accidents. Stop for a moment and realize that if every individual involved had accepted the responsibility of doing his or her job as professionally as possible, at least 75 percent of our accidents would not have occurred in these past 11 months! Professionalism equates lives saved and equipment saved in our critical business of flying. Our duties as aviators may be challenging and even on occasion risky, but our training and our skills are commensurate with the tasks—if properly applied and judiciously executed.

Even this very day, a comprehensive aviation accident prevention plan is being prepared at Department of the Army and will be disseminated to the field before the end of the month. I ask each and every member of the Army Aviation team to give it your total support—on the ground and in the air. Make FY 1983 a banner year for safety. It can be so only with your support.

Let me conclude by telling you of two very recent and welcome additions to the Aviation Center command group: Colonel J. Kitterman, formerly commander, 11th Aviation Group, U.S. Army Europe, is now the chief of staff, replacing Colonel Ben Pergerson who departs this month to become the chief, Colonels Division, Military Personnel Center; Brigadier General Chuck Teeter who served last as the assistant division commander of the 2d Infantry Division in Korea is also now aboard as the deputy commanding general of the Center.

My final word to you in FY 1982—let our theme be "Accident Free in '83."

Major General Carl H. McNair Jr.
Commander, U.S. Army Aviation Center
Fort Rucker, AL

Army Aviation in Latin America

Lieutenant General
Wallace H. Nutting
Commander in Chief
United States Southern
Command

THE SERIES OF articles beginning this month, authored by members of the 210th Combat Aviation Battalion, 193d Infantry Brigade (Panama), the Army component of the U.S. Southern Command, focuses on the diversity of the Army Aviation mission in Latin America. Although the number of assigned aircraft in the unit is small, the Army Aviation mission here remains a big one. The dense jungle, tropical climate, varied terrain, tactical training, civic action missions and threat in the region present unique challenges.

Tactical aviation in Latin America often presents a significantly different picture than the one painted for the trainer, tactician and operator of Western Europe. In the U.S. Southern Command's area of responsibility the tropical environment underscores the dynamics of battle in proportions often inappropriate elsewhere. For the Army component, it is an environment where limited aerial and ground observation also limits fields of fire; where the commander faces serious obstacles to rapid ground movement; where light infantry and small arms predominate; and where tactical maneuver, rapid movement and logistical efficiency elevate the helicopter and airmobility to the forefront.

Doctrine. With respect to tactical, logistical and operational doctrine in Army Aviation, it is apparent that some thinking and doing is necessary. Our doctrine and way of training tactically and technically proficient aircrews, and integrating aviation into the plan of the ground forces, must be continually assessed as it applies to concentrating those forces at the correct time, and then controlling those forces while maneuvering them in the right combination to destroy the enemy. One good method of gaining insight into the dynamics of the jungle battlefield is by practicing and training with proven methods while obtaining practical, and often new, experiences from the soldiers living and operating in the jungle. Articles are one way to capture some ideas from the latter.

While the Army doctrine for jungle operations is being refined, we must always be careful to avoid rigidity of thought by referring to tactical doctrine in terms of "never" or "always," but rather to encourage innovative ideas and thought. This rule is very apparent in the night training activities of aviation based in Panama, where training has enhanced our night aviation capability.

Airmobility. If helicopters are important anywhere—in providing essential mobility for light infantry; for achieving shock effect through surprise, deception and maneuver; for extending the ground commander's area of influence; for positioning indirect fires in support of the ground forces; for augmenting the ground commander's capability to move, shoot and communicate—then it is in a jungle environment. This becomes very obvious throughout the articles.

In the 193d Infantry Brigade (Panama) aviation is tactically integrated with the ground commander in airmobile operations, in artillery raids and in his scheme of maneuver wherever it can better support. From the onset, the brigade's aviators gain appreciation of the "ground perspective" by undergoing a jungle training program with the infantry.

Training. Training is paramount to success in battle, and combined arms training is also in full swing in the aviation battalion. Particularly noteworthy are the unique training accomplishments toward a 24-hour airmobile capability, even in marginal weather conditions, and the ability to operate and maintain at extended distances. Good training is conducted very much like good battle execution—both have centralized planning and control, and decentralized execution. Continual refinement and training of the combined arms concept as it applies to jungle operations, along with the development of standard operating procedures to enable crisp execution, is visible in both their tactical and logistical execution.

From the training standpoint, realistic and effective training often involves some risks. The good aviation trainer can still accomplish realistic training—safely—through good planning and by using available training tools to enhance training readiness, thus minimizing risks. In the U.S. Southern Command area of operations, good training achieves good results despite a most demanding flying hour program which requires aviation support over extended distances and at the end of a very long logistics tail.

There are some interesting things happening from the Army Aviation and Army component standpoint in Latin America. Aggressive training by competent and confident leaders on the ground and in the air is helping to define and develop the airmobile doctrine in the jungle environment. Some of their efforts and some of their statements may have meaning for all of Army Aviation. The applicability of jungle operations techniques as they pertain to helicopter operations have encouraged imaginative thought. Innovative ideas have been put into action. It is apparent to me that a collective pride and cohesion are being fostered by the Army component units. I encourage Army service school thinkers to contact the 193d Infantry Brigade (Panama), where specific tactics and techniques can be examined further for their applicability in developing a jungle doctrine for the Army.

MONTHLY WRITING AWARD

photo by MSG Dave Goldie

photo by MSG Dave Goldie

ABOVE: Airmobile operations are the word of the day when operating in the jungle, particularly against guerilla forces

BELOW: Providing cover fire for airmobile operations in Panama means returning ground fire in a general direction, as seeing a target through triple canopy jungle is absolutely impossible

Knights Train for the Night

Major Frank L. Carson
Commander

CW3 Owen D. Scruggs
Standardization Officer

114th Combat Support Aviation Company
210th Combat Aviation Battalion
193d Infantry Brigade (Panama)
Howard AFB, Panama

NO DOUBT ABOUT it, the aircrews of the 114th Combat Support Aviation Company (CSAC), "Knights of the Air," have a challenging flying environment. In the Republic of Panama, they operate over a carpet of triple canopy jungle, rapidly changing terrain elevations, and into precipitous "hover-hole" landing zones (LZs). Nights in Central America are blacker than the proverbial "black hole." Add the weather component, which is characterized by an 8 to 9 month monsoon or rainy season and a shorter dry season during which the skies are clear but extremely turbulent. Year-round, almost every flight at terrain altitudes is a thrill.

The normal mission of the Knights consists of airmobile operations in support of the 193d Infantry Brigade, the Jungle Operations Training Center (JOTC) and the U.S. Army School of the Americas. The unit must also be prepared to conduct disaster relief or civic action missions throughout Central and South America. Perhaps the best way to convey a feel for our mission is a war story.

There I was – 200 feet over some of the most unforgiving terrain in the world, with so

much darkness around me I swore I had been swallowed by a cow; and a ground commander in back of my helicopter wanting to land in an LZ that I wasn't too crazy about in the daytime! All I needed now was for the rain to start again!

The opportunity to excel started when we tried to find our little "hover-hole." The trees around the LZ rose about 60 to 80 feet on all sides, making it impossible to see the landing area until the aircraft was directly over it. I was lucky and found it! The next problem was to establish an approach that would allow the landing to be made without having my entire life flash before my eyes! We weren't so lucky here, although nothing was broken. The takeoff was probably the easiest part of the entire ordeal. Maximum power was applied until we felt we were above the barriers, then blackness forward, airspeed, return to the pickup zone and start the whole gory mess over again.

As the above example depicts, night operations used to be an exercise in terror. No matter how long and hard we trained, the night-terror syndrome persisted. In retrospect, the basic problem was in applying the Wright brothers' tactics and technologies (fly by feel and sight) to accomplish space-age missions. We had all been exposed to night vision goggles (NVG) at the Aviation Center at Ft. Rucker, AL, and we even had some on hand in the unit, but by late 1980 they were still toys. Oh sure, we used them on a haphazard basis but had no systematic or organized program for their integration into our unit mission. Thus, there was no confidence in them.

The turning point in the 114th CSAC came in December 1980 when the Forces Command commander said that the mission of aviation on the modern battlefield depended on total proficiency at night, the skilled use of night vision devices and absolute coordination between air and ground elements. More specific guidance followed from brigade and battalion, the crux of which is that we must train the way we will fight and focus on what will lead to success in battle. Realism and the ability to integrate safety into mission accomplishment were stressed as the keys to a well trained unit in night operations.

The first step in developing our NVG program was to determine where, or at what level the unit needed to be trained. The commander, together with subordinate leaders and standardization personnel, determined that if 50 percent of the unit's aviators were NVG qualified, we could commit one-third of our aircraft 24 hours a day. Achievement of that goal would increase the combat power of the 193d Infantry Brigade dramatically.

Resources available to be used for the training were an experienced NVG standardization instructor pilot (SIP) and 87 sets of AN/PVS-5A night vision goggles. Higher headquarters provided the necessary flight hours. However, only 3 of the 23 assigned UH-1H Huey aircraft had been modified for NVG flight, so organic maintenance would have to begin the required modifications.

Obviously the first step was to train the trainers. With our one NVG SIP the process began in October 1980 and was completed in July 1981 when the last IP, yours truly, was dragged kicking and screaming to the aircraft to get NVG qualified. Then we were ready to build a complete night training program.

Using the Army Aviation Center's exportable NVG training package as a guide, the unit began developing an effective "Night Flight Training" standing operating procedure (SOP) which would go beyond the NVG qualification phase and would further define training objectives for NVG, tactics and continuation training. Finally, this training would be integrated with brigade tactical field exercises and airmobile operations for the JOTC. Aviators selected for the instruction would be carefully screened for their flying ability and experience, motivation, medical fitness and aptitude to perform under goggles. The end product was to be a unit with increased night capability and one that could eventually practice night missions similar to those they would actually fly in combat. In the continuation phase of training, the unit would train to support night airmobile operations by actually conducting night airmobile operations with the NVG devices, i.e., "train to do by doing."

Once all IPs and several platoon aviators were qualified, we attempted to initiate night vision devices into mission support, using AN/PVS-5A NVG. Our first attempts were less than desirable in planning and execution.

The first and most significant problem was ignorance. We had logged countless hours in the traffic pattern and very few, if any, in the tactical flying area. Subscribing to the theory that altitude is life when flying at night, we would fly to the landing zone at altitudes from 300 to 500 feet AGL (above ground level), don the goggles and then attempt an approach and landing. This method was frightening in execution and tactically unsound

due to the increased possibility of detection in the objective area.

Lights in the landing zones presented another problem. It was not always possible to have light available if the LZ was in one of the many remote areas. When they were available, they were poorly aligned and positioned. At other times the "Y" would be set up properly but would run away (soldiers holding lights) when the aircraft was on short final. Without a doubt, our most serious problem came from well meaning soldiers aiming flashlights directly into the face of the pilot just before touchdown. This is a serious safety hazard anywhere; it is especially uncomfortable—and dangerous—when landing in a single-ship "hover-hole" with an NVG affixed to your eyeball.

Every unit's mission is a little different, particularly as concerns NVG usage, so any unit embarking on an NVG training program must be prepared to use the "scare and error" technique to develop the appropriate tactics. The key to survival during this phase is total involvement by the commander, standardization and safety personnel. After a series of "scare and error" exercises the standardization officer began to meet regularly with the NVG pilots in an attempt to document ideas and experiences which formed the basis of NVG tactics. From those meetings and many hours of NVG training our present Night Training Program was developed and continues to evolve.

The 114th CSAC program consists of night, Night Hawk and night vision goggles training. All personnel assigned to the company are qualified in night operations. Using TC 1-135, "Aircrew Training Manual, UH-1," all aviators are continually trained and evaluated on night maneuvers.

In Night Hawk training, the average pilot receives about 10 flight hours and 10 academic hours regardless of previous training. After qualification, aviators are continually monitored and evaluated to ensure these skills do not deteriorate.

The last, and most demanding phase of the program, is qualification in AN/PVS-5A night vision goggles. Aviators complete required academic instruction and normally receive about 15 hours of flight. The first 10 hours of flight is normally conducted in the traffic pattern which perfects individual skills; the remaining flight hours are used to perform terrain flight operations in the tactical training area.

In order to maintain currency, pilots are required to fly a minimum 8 hours quarterly, of which only 4 may be flown using daylight filters. This increased currency requirement is necessary to ensure safe NVG operations in our environment.

Our primary mission is tactical aviation support of the 193d Infantry Brigade; and since we are the only UH-1 unit in Panama, we work very closely with the ground units. The 114th's night training program qualifies aviators but it *also* opens new vistas for the supported units.

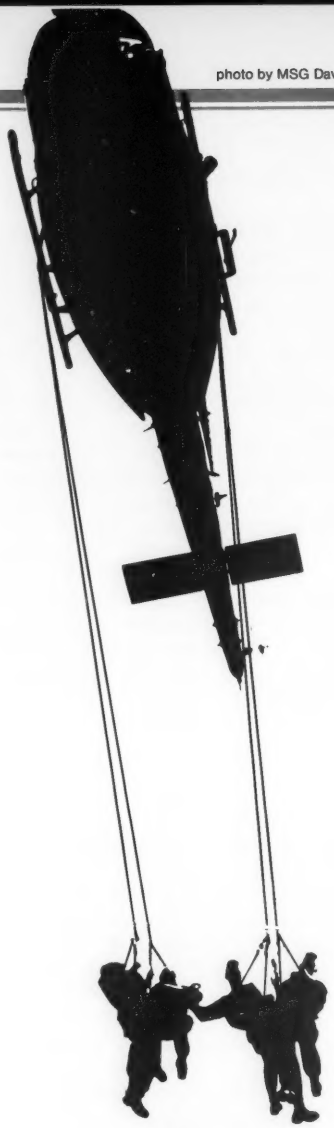
All missions are conducted at terrain flight altitudes, under blackout conditions and complete radio listening silence. A normal operation usually involves routes between 20 and 40 kilometers with landings made at one or more single-ship landing zones. Control is maintained by a series of aircraft checkpoints along the assigned route. Remaining on the assigned route and crossing checkpoints at specified times is imperative for both safety and mission accomplishment. Converging routes are avoided and there is normally a minimum 3-kilometer separation between routes. All pilots and crewmembers attend a debriefing at the completion of every mission which allows any problem areas to be discussed and dealt with while the information is current and provides input necessary to continually update SOPs and checklists used during NVG operations.

We constantly seek methods to extend the NVG capabilities of the unit. A recent operation, conducted with a training battalion at the JOTC, required the unit to insert troops to a defended rooftop about 15 meters square. The ground unit was to perform a rescue operation and prepare for vertical extraction. A second aircraft was used to vertically extract personnel off the same position. The entire operation was conducted in less than 5 minutes, during the hours of darkness, using night vision devices. It was considered a complete success and proved that, with sufficient training, very complicated special operations can be conducted using night vision goggles.

The question was recently raised as to what effect nuclear, biological, chemical (NBC) operations would have on NVG equipped aviators. In order to find an answer, the standardization officer and another brave soul conducted a training flight with AN/PVS-5As while wearing the M-24 protective mask. After 1 hour we determined that it was not as totally outrageous as many first believed. NBC operations are now part of the qualification and continuation training phases of the NVG program.

The unit is gaining proficiency monthly but has a long way to go. It is significant, however, that the 114th CSAC now routinely accomplishes night tactical troop insertions and extractions into and out of jungle confined areas and pinnacles using NVG devices, meaning it has enhanced its survivability and effectiveness to the ground commander during the hours of darkness.

photo by MSG Dave Goldie



The new JOES (Jungle Operations Extraction System) extraction method developed by the JOTC cadre now makes it easier to rescue downed aviators from dense jungles. The system incorporates a standard "Swiss" rappelling seat and a regular troop rappelling rope, items that are readily available around any infantry unit today

Battle Line the Sky

Major Mark A. Ison
Operations
210th Combat Aviation Battalion
193d Infantry Brigade (Panama)
Howard AFB, Panama

SOME OF THE MOST challenging training conditions and demanding flight standards in the Army—these are what pilots of the 210th Combat Aviation Battalion (CAB) routinely face accomplishing their missions in Panama.

Located only 600 miles north of the equator, Panama encompasses varied types of terrain, including sweeping hill country and peaks formed by extinct volcanoes that tower up to 7,000 feet. Much of the country is covered with thick, triple canopy jungle that mostly offers only widely scattered, one ship landing/pickup zones (LZ/PZ). It is flanked by the Pacific and Atlantic oceans that are connected by the Panama Canal. The canal includes a series of large lakes and the Chagres River, which draws much of its water from tropical rain forests.

Temperatures vary from the high 70s to the mid-90s, year round.

Besides flying in relatively hot weather, the aircrews must also operate in two distinct seasons:

rainy season, from April through December, and dry season, called "summer," from January through March.

The rainy season is characterized by ground fog, low ceilings, showers and heavy cloudbursts. Aircrews are often required to fly hood or actual instrument meteorological conditions (IMC) during single aircraft administrative flights and during tactical training missions going from one ocean to the other. Multiship flights may either separate and fly IMC, or transit the canal area as a flight by combining nap-of-the-earth, contour and low-level flight.

During the dry season, the trade winds blow steadily and extremely dry, dusty conditions prevail, often causing light to moderate turbulence by mid-day throughout the operating area. Wind, smoke (most Panamanians use the dry season to burn away the 8- to 12-foot high grass that grows during the wet season), haze and bright sunlight are the major climatic conditions that affect aviation operations.

A common hazard during both seasons is birds. It is not unusual for a flightcrew to see a sky filled with beautiful red, yellow or blue-headed parrots in formation flight. Not so beautiful are unorganized flights of black buzzards in groups of hundreds.

These operational conditions set the stage for a dynamic training program unique to the 210th CAB. First, however, the battalion mission must be discussed.

The primary mission is to support U.S. Army forces that are in Panama to defend the Panama Canal. Those are the 3d Battalion, 5th Infantry (including one airborne rifle company), the 4th Battalion, 10th Infantry, and the 4th Battalion (Mech), 20th Infantry, the 3d Special Forces Battalion, 7th Special Forces Group (Abn), and the Jungle Operations Training Center (JOTC)—all organic to the 193d Infantry Brigade (Panama).

The 210th CAB also provides aviation support to:

- about 14 CONUS (continental United States)-based infantry battalions that undergo 3 weeks of jungle training annually at JOTC
- Latin American officers and soliders who attend courses at the U.S. Army School of the Americas
- the Panama Canal Commission
- other U.S. agencies in Panama.

Real-world mission support is always up-front and often comes during maximum support periods. An example of this diversification was during joint training exercise (JTX) Black Hawk IV, 1981, when the battalion was supporting two Organization of American States missions, one in El Salvador and Honduras some 700 nautical miles to the north with two UH-1 Huey aircraft, and another in Ecuador/Peru some 2,000 nautical miles to the south, also with two Hueys. In addition, three UH-1s and one OH-58 Kiowa were deployed to Costa Rica for annual high altitude qualification training. As one can see, this organization provides a great variety of aviation support in an operational area the size of the contiguous United States.

The battalion's secondary mission is to furnish aviation support for disaster relief operations throughout Central and South America. An example would be the movement of personnel and critical supplies to remote locations after a major storm or earthquake.

To accomplish its missions, the 210th CAB is organized as shown in the accompanying chart, a special organization that is tailored for the many OH-58, UH-1H, CH-47 Chinook and U-21/C-12 flights. The annual flying hour program is budgeted for 12,130 hours.

While Panama is largely low, dense jungle, other areas of operation for isthmus-based aviators can include the Andes mountains in Peru, where oxygen is required just to sneak through the valleys

I stated earlier that flying in Panama is unique and that operational conditions set the stage for a dynamic training program. This program applies to all crewmembers who operate in and over the jungles of Panama.

Training of newly assigned pilots and crewmembers is planned in a series of phases. Water training, a must because of the two oceans, a large canal and several larger lakes, is conducted within the first 30 days

CLOCKWISE FROM LEFT ABOVE: **When a map in Panama says "one bird LZ" it means it**

Survival and evasion training given at Panama's Jungle Operations Training Center for pilots and aircrews finds aviators mastering the art of propelling a 7-man lifeboat—in a semistraight line

The JOTC aviator survival and evasion training is often the first time many young fliers have ever deployed their water wings, let alone tried to swim with them on

Something simple, like opening a coconut, isn't so simple if you've never done it before. Aviators are exposed to this and numerous other survival skills during their 3-day survival and evasion training at JOTC photographs by MSG Dave Goldie

after arrival. Unit training schedules are followed for this instruction as dictated by appropriate aircrew training manuals.

Specialized pilot and crew skills are developed during mission training at JOTC. Examples are stabo, rappel, Night Hawk/night vision goggles approaches and takeoffs from single-ship LZ/PZs, paradrop operations and helocast/waterborne operations for CH-47 flightcrews.

The need for downed aircraft survival skills is met with a two-phase jungle survival training course developed by the 210th CAB and JOTC. It is the only course of its kind available today in the Army. (See "Prepared to Survive," *Aviation Digest,* February 1982, pp. 42-44.)

As a result of their training, aviators gain a healthy respect for the jungle and for the difficulties an untrained or physically unfit soldier might encounter in a rugged tropical environment. More than that, they learn that achieving established training standards will enable them to survive so they can fly again. Up to this point, training activities discussed have covered only a small part of the battalion's training program. Collective/individual training programs are an unending process. The soldiers are taught the importance of tactical/technical task proficiency on a continuing basis, i.e., training is everything and everything is training. Time being our most precious resource, the principles of the Battalion Training Management System are the key to a dynamic training program. Hands-on, job related training integrated into the daily work schedule, supervised by the noncommissioned officer leadership, is a must. The soldiers of this battalion represent 43 different military occupational specialties and have achieved an 88 percent SQT (skill qualification test) rate in fiscal year 1982.

Flying and training in Panama are extremely demanding, but they are also fun. The 210th CAB has a defined mission—defend the Panama Canal—which keeps us well-trained, ready and able. It also gives substance to the battalion's motto, "Battle Line The Sky," and accounts for the 210th Combat Aviation Battalion's well deserved reputation throughout the Army Aviation community, as well as Central and South America.

illustration by Paul Fretts

CH-47 Operations in Central & South America

Captain Dennis Patrick
Platoon Leader
CW4 John Robinson
Operations Officer
CW3 Tom Susi
Instructor Pilot/Instrument Flight Examiner

3d Platoon, 242d Aviation Company
210th Combat Aviation Battalion
193d Infantry Brigade (Panama)
Howard AFB, Panama

THE PANAMA CANAL, a man-made feature through which ships transition between the Atlantic and Pacific oceans, highlights the primary area of operation for the 3d Platoon, 242d Aviation Company. This independent CH-47 Chinook platoon provides medium-lift helicopter support to the 193d Infantry Brigade (Panama) and to the various countries of Central and South America.

There are 75 people assigned to the platoon, and it has 8 Chinook helicopters. Each aviator and crewmember has to maintain a high level of proficiency in all realms of flight to accomplish missions ranging from tactical troop moves, resupply flights and artillery raids to helocasting, aircraft recovery, mountain operations, sea rescue and civic action—the majority of which will be flown in high temperatures, with poor visibilities and low ceilings.

Many of the tactical support missions are performed at night during periods of marginal weather conditions using minimum lighting. In addition, most of them are into small, single-ship landing zones. To ensure the safe, professional accomplishment of these flights, night flying and training have become a way of life for the CH-47 pilot in Panama.

Due to the tactical mission of the 193d Infantry Brigade (Panama), the nature of the Panama Canal area of operations and the political situation in and around the Republic of Panama, it is not reasonable to envision armed conflict in Panama taking a conven-

Army Aviation in Latin America

photo by MSG Dave Goldie

Helicast resupply missions featuring supply-laden RB-15s being pushed from low flying Chinooks at fixed water locations are a much opted-for support technique used by deployed infantry elements

photo by MSG Dave Goldie

Personnel helicasts are a real test of Chinook flying ability. Holding the CH-47 10 to 15 feet off the water at 15 knots long enough to launch a loaded RB-15 followed on the same pass by squad members is not an art perfected on the first try

tional form as in Europe. That is to say, there will in all likelihood be no main battle area and certainly no forward line of own troops. Therefore, the CH-47 pilot in Panama can expect to work throughout the operational area while the CH-47 pilot in Europe would operate primarily in the rear area. As a result, the 3d Platoon routinely trains with the artillery and special forces working on artillery raids, paradrops and helocasting.

Helocasting is a unique mission the platoon conducts in conjunction with the Jungle Operations Training Center and the Special Forces. It allows a unit commander the flexibility to air deliver 12 combat equipped troops and loaded 15-man rubber boat (RB-15) into a water landing zone in an area where conventional landing zones are not available. To successfully accomplish this, the pilot must maintain a constant 10-knot, 10-foot profile over the water while the troops and boat exit the aircraft. Imagine the excitement involved and the skill required to fly nap-of-the-earth down a winding river, identify the drop zone, put the cargo in the river and depart undetected in a CH-47! Helocasting is extremely valuable in the jungle environment of Central and South America.

While tactical training is most important, the unit participates in other exercises and in various real-world missions. High altitude training, ranging from 6,000 to 14,000 feet, is conducted annually in nearby Latin American countries. Pilots and crewmembers become proficient in performing mountain approaches and landings at high gross weights under adverse wind and turbulent conditions. This training enables the platoon to transport ground forces and equipment to any location in Central or South America and has proven essential to the successful completion of various civic action missions.

As the 3d Platoon, 242d Aviation Company, is the only medium-lift unit in the theater, its CH-47 helicopters are in high demand throughout Central and

photo by SFC Charlie Lopez

Once the LZ hazards were removed by the engineers, a 210th CH-47 lifts the minidozer to another LZ in the jungle around Ft. Sherman, Panama

South America for such civic action missions. Those are often in remote areas which may require extended flights over unpopulated areas with no fuel sources. Because of this requirement, the unit is authorized to use internally mounted auxiliary fuel tanks which allow up to 7 hours of flight without refueling.

One mission to an area lacking the proper aviation support facilities was the recent support of the construction of a microwave transmitter in Pasto, Colombia. The unit delivered more than 80 external loads to the summit of a 14,000-foot mountain, proving the benefit of the auxiliary fuel tanks as well as the professionalism and talents of the crewmembers.

In the recent past the Chinook pilots and crews have been called upon to assist in disaster relief, carry food and medical supplies to people in need and to carry supplies and equipment to the Cuna Indians. The unit has also helped recover foreign aircraft and aided in the rescue of people and ships at sea.

The most recent civic action mission came as a result of the collapse of a bridge in David, Republic of Panama. The 3d Platoon, 242d Aviation Company, was notified on Friday to ready an aircraft to support the reconstruction of the bridge, and Saturday morning the aircraft departed. Completion of the mission entailed the moving of construction material over a distance of 50 miles and required the crew to spend 3 days in David. That time and effort clearly demonstrated the dedication of the United States to the promotion of goodwill throughout Central and South America.

Pilots and crews of this unit are constantly learning and are searching for new and different challenges. Their professionalism, pride and "can do" attitude ensure success on any battlefield as well as the success of any future goodwill mission in Central and South America. Let it be said that the 3d Platoon, 242d Aviation Company, stands prepared and willing to provide CH-47 support to anyone, anywhere—and that it typifies the statement, "ALL THINGS DONE WELL."

Maintenance, Latin American Style

Captain G. D. Muse
Executive Officer
590th Transportation Aircraft Maintenance Company
210th Combat Aviation Battalion
193d Infantry Brigade (Panama)
Howard AFB, Panama

PROVIDING MAINTENANCE support for the 210th Combat Aviation Battalion (CAB), the aviation element of the 193d Infantry Brigade (Panama), can be a unique and sometimes very frustrating experience. Principally, that is because many of the battalion's support missions take aircraft out of the Panama Canal area, often well beyond the reach of normal maintenance facilities. The 590th Transportation Aircraft Maintenance Company (AVIM) found that unusual problems call for unusual solutions.

Unlike their European, Korean or CONUS (continental United States)-based counterparts, the 210th CAB aircrews routinely cross international borders to provide training, maintenance and logistic support to countries throughout Central and South America. The 590th TAMC's maintenance responsibilities, however, do not disappear when aircraft cross beyond the invisible borders. In fact, if aircraft go down for maintenance, the unit's problems are just beginning.

The first major obstacle is communications. The 590th TAMC attempts to trouble shoot maintenance problems based upon whatever information is available. Although a small maintenance crew accompanies units when they leave Panama, it cannot carry enough spare parts and equipment to cover every contingency. If a situation arises that is beyond the capabilities of the small maintenance crew, 590th TAMC specialty teams go into action.

These specialty teams were organized specifically to handle out-of-country difficulties, and most have at least one member who is a Spanish linguist. All team members are experts in their respective specialties and have sufficient experience to assist in other areas, adding up to an expert grouping of maintenance personnel that can react immediately whenever a questionable maintenance problem arises. The maintenance officer gathers spare parts and equipment deemed necessary to ensure repairs are made expeditiously. Surprisingly, most repairs are completed without major delays or logistical requirements.

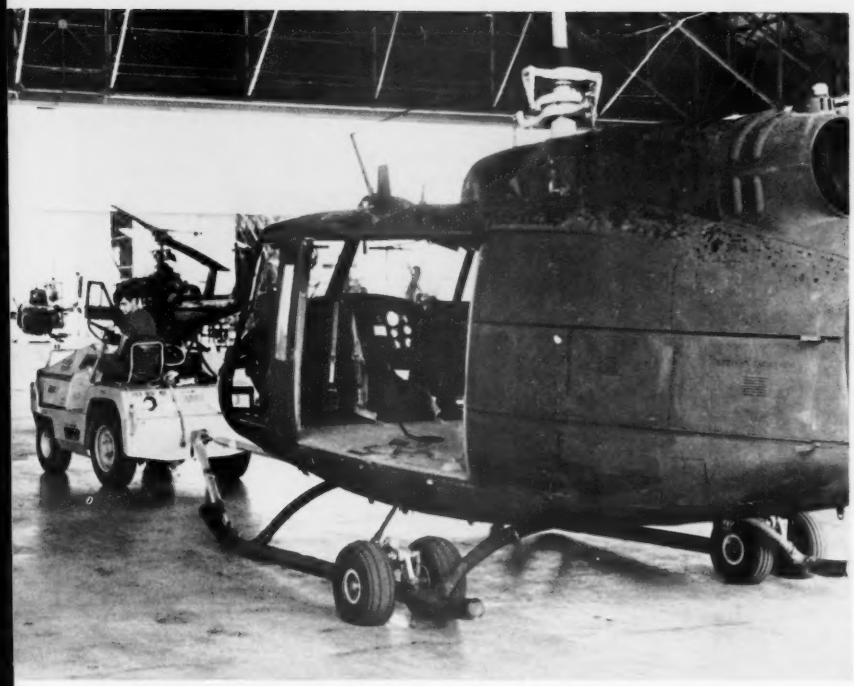


photo by SFC Charlie Lopez

Mechanics pull a UH-1 out for a tailrotor alignment check at the 590th's hangar at Howard AFB, Panama

Depending on the circumstances and the availability of transportation, maintenance specialty teams will normally arrive onsite within 24 hours of their initial notification. The 210th CAB has two fixed wing aircraft—a U-21 and a C-12—that are normally used in these situations. On occasion, the U.S. Air Force has transported heavy equipment if a C-130 is scheduled to fly to that particular country. In the event a helicopter is not repairable at the field site, a sling-load operation is initiated. If feasible, a CH-47 from the 210th CAB's Chinook platoon is tasked to sling the downed aircraft to a usable airfield. There the aircraft is repaired or disassembled and returned to Panama aboard Air Force transport airplanes. Although that situation has never occurred, the potential for it remains high because of the 210th CAB's out-of-country support mission requirements.

The 590th TAMC is often required to provide mobile training team (MTT) support to Latin American countries that possess aircraft similar to those operated by the U.S. Army. These teams train the country's maintenance crews and assist them in updating their maintenance procedures.

MTTs can vary from 1 day "hit and run" classes to extended training which can last for several months. The latter requires lengthy preparation as reference material, training aids and lesson plans must be translated and bilingual instructors have to be used. The interesting thing about MTTs is that the trainers learn so much from their counterparts. Of equal importance is the rapport established and the enduring friendships that result.

Aviation maintenance support in Latin America is more than having the right wrench. Soldiers in the 590th TAMC have to be mechanics as well as diplomats, trainers, travelers and troubleshooters. That is what makes being part of a maintenance effort professionally rewarding. It may not always be fun—although most of the time it is—but it surely is exciting and interesting.

U.S. ARMY SAFETY CENTER

ROTOR-INDUCED WHITEOUT

Winter presents many hazards to helicopter operations. One of these winter hazards which causes aircraft accidents each year is rotor-induced whiteout. The following two cases are typical.

Four UH-1Hs were on a troop insertion mission. The formation prescribed was a diamond formation from liftoff until the mission was completed. The flight platoon leader received the mission from the infantry platoon leader with a request for an immediate departure. This permitted only a sketchy briefing and no time for flight planning.

The troops were loaded and the aircraft took off. After 25 minutes in flight, the pilot of the lead aircraft decelerated and began an approach toward the wood line of a large, open, snow-covered field. Both the pilot and copilot (PIC) of the No. 3 aircraft were surprised—the copilot because he did not recognize the field ahead of them as the coordinates of the first LZ that had been briefed, and the pilot because he had begun to overtake the lead aircraft before he realized lead was decelerating in an approach without advance warning. The No. 3 pilot was able to regain his relative position in the flight and maintained that position almost until he landed.

During termination of the landing, rotor-induced blowing snow developed, and the pilot lost

outside visual reference with everything except the top of the tree line to his front. The copilot, looking down through the chin bubble on the left side, told the pilot he thought they were moving backwards. The pilot did not sense any backward movement but, almost simultaneously, he saw the trees on the horizon tumble as the aircraft rolled right and came to rest inverted.

The copilot jettisoned the door on the left side of the cockpit and exited, followed by the pilot. One of the passengers seated on the left side of the aircraft removed the emergency window in the cargo door and exited, followed by the crew chief and the other seven passengers. Two of the passengers sustained minor injuries.

Adequate time to plan the mission was not given to the aircrewmembers. Although the mission was received before the start of the training exercise, final details were not available until the morning of the mishap. The flight leader, in his haste to meet the requested departure time, did not provide route of flight data or adequate time for the other pilots to plot the coordinates before takeoff. When the flight leader began a deceleration and approach without warning to an area that did not coincide with any of the map coordinates he had given the flight, the rest of the flight was somewhat surprised. Although the flight leader evaluated weather and performance planning, time was not available for the others to do the same. Radio silence was imposed on the flight and an alternate means of controlling the flight was not provided.

Contrary to instructions in TC 1-12, the flight leader led the four aircraft in a close diamond formation to a landing in a snow-covered field, instead of spacing them out at 15- to 30-second intervals. This resulted in enough rotor-induced blowing snow for the No. 3 pilot to become disoriented. The flight leader was not aware of the instructions in TC 1-12.

When the approach was initiated, the No. 3 pilot used a greater than normal decelerative attitude to regain and maintain position in the formation throughout the approach. When the aircraft entered the rotor-induced blowing snow, it drifted to the rear once outside visual reference was lost by the crew. The copilot (PIC), concerned with landing at the wrong LZ, was engrossed in his map during termination of the landing and did not initiate a go-around. The pilots of the No. 2 and 4 aircraft did not land in the LZ after seeing the blowing snow induced by the first aircraft.

As an OH-58 and two Cobras were taking off from a field site, visibility began to decrease because of light snow. Snow-showers and one-half mile visibility had been forecast. Fresh, loose snow about 6 to 8 inches deep covered the ground. The IP in one of the AH-1s momentarily lost sight of the lead OH-58 during takeoff because of blowing snow and closed his interval to 200 to 300 meters. The two Cobras followed the OH-58, with the weather rapidly deteriorating. Crossing a ridge line and seeing heavy snow moving toward them, the OH-58 pilot said he was going to make a right turn and return to the takeoff point.

As the IP of the No. 2 aircraft completed his turn, he saw the OH-58 cross a powerline and disappear from sight in the snow-shower. The AH-1 IP had just decided to land when the platoon leader, flying in the OH-58, called to the pilots to pick a spot and land. The AH-1 IP picked what appeared to be a level spot and began his approach. On final at about a 5-foot skid height, the aircraft was completely engulfed in rotor-induced blowing snow. The IP became disoriented but couldn't go around because of the powerlines ahead of him. He applied aft cyclic to continue his landing.

The AH-1 hit the ground with the right skid and then the left skid and rolled over. The IP and pilot exited uninjured.

The IP was not new to winter operations. He was well qualified, highly experienced, current and proficient in the type of flying he was performing when the accident occurred. The problem arose when the IP had to shoot a downwind approach to a snow-covered field. The rotor-induced blowing snow cloud stayed with the aircraft as it continued forward. An upwind approach will allow a pilot to stay ahead of the blowing snow cloud.

The flight waited too late to land. The AH-1 IP was the most experienced pilot in the flight and should have advised the flight leader to land earlier when he realized the weather conditions were deteriorating. A lack of weather information concerning cloud tops and icing conditions also contributed to the accident. Without this information, the IP had to rule out vertical helicopter instrument recovery procedures.

The best way to prevent these types of accidents is through a well organized unit training program. Pilots lose some of their winter flying proficiency during the summer months and should be given refresher training on blowing snow conditions just before the first snowfall. Pilots should also be familiar with appropriate ATMs, FM 1-51, and DA Training Circular 1-12.

Advance planning is still the key to successful winter operations.

PEARL'S

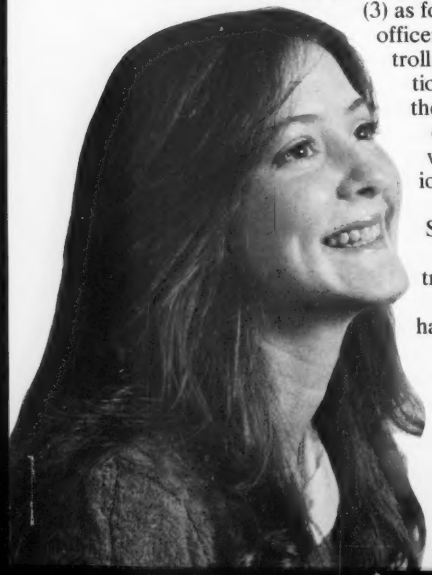
Personal Equipment And Rescue/survival Lowdown

A New Look To AR 40-61 Is Coming

A serious recurring problem exists with security and inspection of aviation survival kits containing diphenoxylate hydrochloride (Lomotil), a Schedule V controlled substance. The provisions of paragraph 3-5, AR 40-61, are usually applied by field activities, resulting in unnecessarily frequent and cumbersome inspections; storage security requirements that are unrealistic; or, in some cases, removal of the substance from the kits in order to eliminate the problem. The latter action improperly denies downed aircrews adequate protection from disabling diarrheal conditions; it also increases the aircrew's risk of potentially fatal dehydration, especially under conditions where water supplies are limited, such as desert environments. The following DA Form 2028 changes to AR 40-61 *have been recommended:*

Page 3-22, 23, paragraph 3-55a, line 1, change to read: a. An inventory of controlled substances will be conducted monthly except, however, that controlled substances which are components of aviation survival kits will be inventoried at the same time as the periodic inspection of such kits is conducted. RATIONALE: Survival kits are inspected every 90 days; inspection every 30 days for controlled substances is an unnecessary additional workload, particularly since the only controlled substance is diphenoxylate hydrochloride (Lomotil).

Page 3-23, paragraph 3-55a, add a new paragraph (3) as follows: The inventory officer for Schedule V controlled substances in aviation survival kits will be the aviation life support equipment technician who conducts the periodic inspection of that kit. RATIONALE: Since aviation survival kits contain no controlled substance other than Lomotil, which has no history of abuse, it is not necessary to have a separate inventory officer.



Carol Stein
photo by Reid Rogers

Page 3-23, paragraph 3-58, add a new paragraph as follows: Para 3-58. Controlled medical items as components of aviation survival kits. When controlled medical items, Schedule V, are components of aviation survival kits, the kits will be issued and stored in the manner as if the kits did not contain a Schedule V item. At unit level, such kits will normally be in the possession of personnel authorized or issued those kits or will be secured in the same manner as prescribed for other aviation life support equipment, such as a locked room, cage or individual locker. RATIONALE: Existing storage practices for survival kits have been unnecessarily rigid and have interfered with proper availability of kits and of Lomotil to aircrew members.

Requisitioning Of Medical Materiel

Defense Personnel Support Center (DPSC) advised the Commander, U.S. Army Medical Materiel Agency, Ft. Detrick, MD, that there have been increasing incidents of requisitions for medical materiel being sent to DPSC by nonmedical, unauthorized requisitioners. Message, U.S. Army Medical Materiel Agency, SGMMA-SDR-B, 181601Z May 82, advised this office, DRCPO-ALSE, and other addresses of AIG 7485, that AR 40-61, Chapter 3, requires requisitions for medical materiel be made by installation Medical Supply Activities (IMSA). We are advising all ALSE users to follow the procedures established in AR 40-61 as pertains to medical materiel. The SGMMA-SDR-B message states "requisitions submitted from inappropriate sources will be rejected without action." Your assistance in this matter is appreciated. Point of contact is CPT Daley, AUTOVON 343-7161, or assistance can be requested by letter addressed to the U.S. Army Medical Materiel Agency, ATTN: SGMMA-SDR-B, Ft. Detrick, MD 20783.

Could This Be You?

Recently a few graduates of the 5th Army ALSE School did not provide complete addresses where forwarding mail could reach them. We are looking for addresses of: Dominick J. Rela, Army Armament Research and Development Command (ARRADCOM) Dover, NJ; Willie L. Tanner, 14th Co 1st BDE, Ft.

Rucker, AL 36362; and Walter L. Eagle, PO Box 623, Marathan, KS 66502. Please send a complete mailing address so we can send you your Associate Membership in the ALSE system. Write to PEARL and your certificate will be sent post haste.

Update on First Aid Kit Inspection

Message DASG-HCL 271820Z Oct 81, reiterates local interpretation of paragraph 10-7, TM 55-1500-328-25, erroneously limiting inspection responsibility to post medical facility personnel. Inspection, marking, replacement of components, sealing, etc., may be accomplished by unit aviation life support, medical supply or medical personnel provided local procedures have been established and the necessary publications, quality control information, etc., are available. The installation or other supporting medical supply personnel will provide assistance as required and ensure appropriate quality control information is disseminated to supported units.

Pistol Holster For SRU-21/P Vest

Dear PEARL, recently I ordered an SRU-21/P survival vest and it was delivered but it came without the holster. Can you tell me what happened, as previously we have been getting the holsters with the survival vest?

Glad you asked that, as we have been having a number of inquiries from the field on this same subject. It seems as though someone submitted a suggestion to issue the vest without the holster as they thought it would result in a cost avoidance. The OV-1 Pistol Holder can be used and actually is easier to install as it is made of a cloth base. The national stock number (NSN) is 1095-00-208-7598 and it is authorized to be sewn onto the SRU-21/P vest. The hip-type pistol holder (NSN) 1095-00-716-0488) and the shoulder pistol holder (NSN 1095-00-716-0934) are also authorized and can be used providing they do not interfere with flying duties. Sorry for any inconvenience this may have caused you. Unfortunately, some configuration changes are made that we are sometimes unaware of and we are continually working toward closing the gap.

AN/MQ-1A Oxygen Tester

We have received a number of inquiries pertaining to the availability of subject tester and how to order it. First, the tester is authorized. Table 2-2 of TM 55-1660-243-12/TO 15X5-4-4-12 (Maintenance Instructions for the Oxygen Mask, Type MBU-5/P) lists the MQ-1 oxygen mask tester as a *required* item of test equipment for the MBU-5/P oxygen mask. This is your basis of authorization. Since the item is not in the AMDF, it must be ordered "off-line" from FPZ under NSN 6695-00-564-9500. If you are in the Army National Guard, you should consult your state USPFO (United States Property and Fiscal Officer) concerning the funding, since a transfer of monies to the Air Force is involved. The contractor of the tester is Winding Specialist Inc. Mr. George Wells is the president and it is possible it could be ordered direct but clearance would have to be obtained from the Air Force through this office.

Water Purification Tablets

I know you have been hearing a lot about these tablets, but we want to be sure you are kept apprised on where we are in this area. You may never need to use them but should the occasion arise, you should have the correct information. The Defense Personnel Support Center advised the following medical materiel was tested and found to be suitable for issue and use provided the unit has a good wax closure and shows no signs of physical deterioration. A retest of 2 years has been established for the following lot: NSN 6850-00-985-7166, water purification tablet, iodine, 8MG, 50S, Van Brode Milling Company, 1311-727 Oct 82 D80075 7SL. NOTE: Cite DPSC project number as authority for extension of expiration date. SAILS ABX 81Q0555. USAMMA will confirm this information in DA SB 8-75 Series.

Water Purification Tablet Serviceability Testing

In order to reduce the large number of individual potency requests and tests performed by the Food and Drug Administration (FDA), the Department of the Army will conduct an annual inventory of subject materiel. Activities are to report all lots which will expire during the following year (reports will be sent to USAMMA, ATTN: SGMMA-LDT, Ft. Detrick, MD). Negative reports are not required. The report will contain the lot number (in sequence), quantity, manufacturer and expiration/retest date. Activities will be notified via SGMMA-LDT-Q message series and the DA SB 8-75 series of all lots undergoing testing. Upon completion of the FDA tests, disposition instructions will be disseminated worldwide by the SGMMA-LDT-Q message series. For this first inventory, activities will provide, in lot number sequence, all lots which have expired or will expire prior to 31 December 1982. Activities will no longer submit individual requests for potency extension for the subject item.

Hand-Generated Flashlights Being Evaluated

Aircrew cold climate survival kits, as originally issued, contained a hand-generated flashlight as a component. The original flashlight was found to be inadequate during service test when used in Arctic/cold

regions and was removed from the kit. The new type A-9 hand-generated flashlight appears to be an improvement over the original issue and the new flashlight will be reevaluated when received by Natick Laboratories. We will keep you posted on the findings and results. PEARL thanks you for your interest in promoting ALSE.

Unsuitable Earplugs

It recently came to our attention that the following medical materiel should be disposed of in accordance with para 3-46, AR 40-61, under provisions of para 2-28, AR 735-11 as unsuitable for issue and use:

NSN	NOMENCLATURE
6515-00-442-4818	Regular, International Orange, Triple Flange 24S, NOTE: SAILS ABX 81QD606 thru 81Q0610
6515-00-442-4821	Small, Green, Triple Flange, 24S, SAILS ABX 81Q0611 thru 81Q0616
6515-00-467-0092	Large, Blue, Triple Flange, 24S, SAILS ABX 81Q0617 thru 81Q 0620

MANUFACTURER, CONTRACT/ LOT NO.

PLASMED, INC.

DLA 120-78-D-4439
DLA 120-80-C-4505
DLA 120-80-C-4507
DLA 120-80-C-5393
DLA 120-80-M FB72 All Lots

NOTE: This information will be confirmed in DA SB 8-75 series.

Protection From Riot Control Grenades

Although this is another one of those "grey" areas, it is of such significant importance that we are including it in PEARL in order to get the widest dissemination possible. Riot control hand grenades, M47E3 (1330-G922) and M4823 (1330-G932) red smoke grenade were recently released from suspension and restricted to training use only. These grenades do not meet safety guidelines relative to eye injury; therefore, extraordinary safety precautions are necessary. Training exercises employing these items should be conducted only when targeted personnel are wearing full face protection. The following eye protection is recommended as an interim measure. Face shield, plastic, riot control, NSN 4240-00-412-0512, see Appendix F, FM 19-15, and protective mask, M17/M17A1 with eye piece outserts installed. A face shield or protective mask alone will not provide the required level of protection. These items must be employed together in order to achieve adequate protection. Personnel involved in handling duds or hangfires must also wear eye protection as specified above.

Helmet, SPH-4 Spares For MK-896A Headset-Microphone

Reference is made to the March issue of the *Aviation Digest* PEARL article which alerted the field to availability of the new earphones. The following parts are now available for requisitioning in accordance with TM 11-5965-279-13 and P, published 15 February 1981:

SOURCE OF SUPPLY (RIC)	NOMENCLATURE	NSN
S9E	Kit, Cord Assembly	5965-00-177-2897
N32	Swivel Assembly	8475-00-117-4538
S9I	Screw, Machine	5305-00-616-8543
S9I	Washer, Lock	5310-00-579-5554
S9E	Plate, Jack Holder	5340-01-007-8366
B16	Microphone, Dynamic CC7A/AIC	5965-01-094-6574
S9E	Earphone, H-143A/AIC	5965-01-094-6602
B16	Boom Assembly	5965-01-094-6573
B16	Cable Assembly Microphone	5965-01-094-6572
S9I	Grommet, Earcup	5325-01-096-1189
S9I	Grommet, Helmet	5325-01-096-1190

The above data has been coordinated with CECOM, Ft. Monmouth, NJ. Points of contact are:

CECOM—Mr. B. Bluford, ATTN: DRSEL-LE-EA-3, AUTOVON 992-3812

Army Support Activity—Ms. G. Lyles, ATTN: STSAP-SC, AUTOVON 444-2537

DRCPO-ALSE—Mr. Tommy Vaughn, ATTN: DRCPO-ALSE, AUTOVON 693-3307

Correction to June 1982 PEARL'S on page 37:

Under the heading **SPH-4 Helmet, Repair of Components,** the NSNs for Earcup Cushion Inserts were incorrect. The correct NSNs are 8040-01-023-4173 and 8040-01-023-4172.

If you have a question about personal equipment or rescue/survival gear, write PEARL, DARCOM, ATTN: DRCPO-ALSE, 4300 Goodfellow Blvd., St. Louis, MO 63120 or call AUTOVON 693-3307 or Commercial 314-263-3307

REPORTING FINAL

Late News From Army Aviation Activities

FROM NEW HAMPSHIRE

Air Medal Awarded. Captain John J. Weeden, Chief Warrant Officer, CW4, Ronald R. Boyle, Staff Sergeant Walter E. Lessard and Staff Sergeant James E. Holub of the 397th Medical Detachment, New Hampshire National Guard, Concord, have received the Air Medal for a rescue mission they flew in January. Governor Hugh J. Gallen made the presentations at a July ceremony.

Receipt of the Air Medal is particularly significant during peacetime because it is normally awarded in connection with conflict or operations against an armed enemy.

The four Guardsmen and their UH-1 Huey helicopter were dispatched to search for two ice climbers who had been reported missing on Mount Washington, an area marked in the winter by high winds and unpredictable weather.

When the hikers were located, their rescue was effected by the Army Aviation crew. While CPT Weeden and CW4 Boyle, as pilot and copilot, hovered the aircraft over the treetops in the face of 30 to 40 mile-per-hour winds and blowing snow, SSG Holub was lowered to the ground where he put first one and then the second injured hiker on a litter. SSG Lessard operated the lift to bring them into the helicopter. At one point, he had to move outside the Huey and stand on the skids, using his feet to manipulate the lines in order to keep the litter from tilting.

At the awards ceremony, Gov. Gallen said, "The courage and compassion these men exhibited during the extremely dangerous rescue mission last winter is an example to us all. They are a credit to the National Guard . . . ."

FROM KOREA

Fast Refuelers. Two units of the 17th Aviation Group (Combat) have developed helicopter refueling systems that have cut normal set-up time by more than 90 percent: one for the UH-1 Huey by the 128th Aviation Company, 52d Aviation Battalion, Camp Page, and one for the CH-47 Chinook from the 271st Aviation Company, 19th Aviation Battalion, Camp Humphreys.

Using elements of the forward area refueling equipment, which are normally deployed to the field separately and then set up, the quick reaction systems are set up and palletized before deployment, cutting field set-up time from the normal 45 minutes to less than 3 minutes.

Using a 600-gallon tank, the Huey system can refuel three aircraft in about 6 minutes, adding 2

First Graduates. Chief Warrant Officer, CW3, Michael E. Mullenix, left, and Captain Robert E. Payne, right, are the first Army National Guard aviators to graduate from the Eastern ARNG Aviation Training Site, Ft. Indiantown Gap, PA. With them is Major General Richard M. Scott, Pennsylvania Adjutant General. Both graduates attended the facility's 2-week U-21 aviator qualification course. They are assigned to the Texas National Guard's Army Aviation Support Facility in Austin. (Bob Foster, PAO, AG's Office)

Tank Zapper. An anti-tank missile streaks from its launch tube during qualification tests of a mast-mounted sight version of the airborne TOW missile system developed by Hughes Aircraft Company. The system is mounted on a Hughes Helicopters, Inc., 500MD Defender, as a result of a joint effort between the two companies. Equipped with the sight, the helicopter can hide behind hills and trees to scout for targets. Once a target is spotted, the gunner can fire a TOW missile, exposing only the sight to enemy detection during the entire operation. Successful firing tests have been conducted recently in the United States and Sweden

hours of flying time for each helicopter. The Chinook system, with two 500-gallon collapsible drums, refuels both tanks of a CH-47 in about 10 minutes, adding 3 hours' flying time. Both systems are carried to forward areas by slingloading under a Chinook.

Constraints placed on Army Aviation operations in Korea by the lack of refueling points and the inaccessibility of many remote field locations were the catalyst that spurred the development of the palletized configurations, according to Master Sergeant James Neal of the 52d Aviation Battalion. **(EUSA PAO)**

FROM FORT RUCKER

Daedalion Award. Members of the Aeroscout Branch, Hanchey Division, Department of Flight Training, completed more than 17,051 accident-free flying hours during fiscal year 1981. That record has earned them the Daedalian Foundation's Army Aviation Safety Trophy for Aviation Training Bases, meaning the Aeroscout Branch has been adjudged to be the TRADOC aviation unit with the best flight safety record and aircraft accident prevention program for the cited period.

Captain John M. Curran, branch commander, accepted the trophy from Brigadier General Chris O. Divich, commandant of the Air Force Reserve Officers' Training Corps, Maxwell Air Force Base, AL. Also sharing in the acceptance were former branch commanders Major Robert K. Jorgensen and Captain Bruce G. McKenty.

The promotion of aviation safety is one of the primary missions of the Daedalian Foundation, a nonprofit organization formed in 1934 and named after the character in Greek mythology who accomplished the first heavier-than-air flight.

Graduation Speaker. Air Force Major General William J. Mall Jr., commander, Aerospace Rescue and Recovery Service, Scott Air Force Base, IL, was guest speaker for the recent graduation of 79 rotary wing aviator students.

"Safety is the prime responsibility of crewmembers, and the greatest single drain on aviator resources is the lack of aircrew discipline," he told the newly rated helicopter pilots. He added, "It's your duty to adhere to proper aircrew discipline. True loyalty and crew coordination require speaking up at the first sign of trouble." **(USAAVNC PAO)**

Blades Needed. If anyone has blades for any Army helicopter that is not in the current inventory, the Army Aviation Museum needs them. Call commercial 205-255-4507 or AUTOVON 558-

4507—or write the Army Aviation Museum, P.O. Box H, Ft. Rucker, AL 36362. The currator will arrange for shipment of the blades.

New Field Manual. FM 1-230, "Meterology for Army Aviators," will be printed and distributed to the field in the near future. It will supersede FM 1-30 which was published in 1976.

The new publication will provide Army Aviation personnel with the general meteorology principles needed to plan and coordinate daily operations and will also be useful as a supplemental text and reference. It is divided into four parts: weather principles and theory; weather hazards; polar, subpolar and tropical weather; and weather flight planning. The two-column format will feature many full-color illustrations. **(Brown, DTD, x-7113)**

First One. Warrant Officer, WO1, Janet M. Flowers is the first black female to graduate from the 9-month Warrant Officer Rotary Wing Aviator Course at Ft. Rucker, AL. She received her helicopter pilot's rating in August; and her first assignment as an Army aviator is with the 227th Aviation Battalion, 1st Cavalry Division, Ft. Hood, TX

FROM TEXAS

Historical Data Needed. Many aircraft components received at the Corpus Christi Army Depot for repair are not accompanied by the necessary historical records. That costs additional manhours and money to reclassify items and place them in special storage and to initiate reports of discrepancy.

Records should be placed in the container's record receptable. If there is not such a receptacle, then records must be put in the container and it labeled to reflect the record's location.

Sending the historical records in a secure manner will get the item into the repair cycle and back to the unit in much less time.

(SDSCC-QQA)

FROM MARYLAND

Workshop. A Military Hearing Conservation Workshop for personnel responsible for the implementation and maintenance of hearing conservation programs will be conducted 17 to 21 January 1983 by the Army Environmental Hygiene Agency in Edgewood.

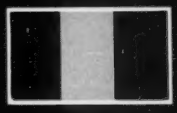
The course outline includes the following areas: physics of sound, anatomy and physiology of the hearing mechanism, physiological effects of noise, noise measurement and analysis, hearing protective devices, engineering control of noise and audiometric techniques.

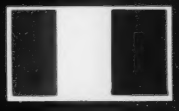
For enrollment, contact Ms. Donley, Training Section, commercial 301-671-4158 or AUTOVON 584-4158. For more workshop information, contact the Hearing Conservation Branch, Bio-Acoustics Division (HSHB-OB), USAEHA, Aberdeen Proving Ground, MD 21010, commercial 301-671-3797 or 3829, or AUTOVON 594-3797/3829. **(HSHB-OB)**

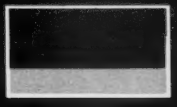
Photo by SP5 Kelly A. Robbins

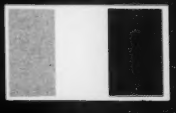
The original framed colored drawing of the 1st Aviation Brigade crest is now in brigade headquarters at Ft. Rucker, AL, where it is admired by the unit's commander, Colonel David J. Allen. The drawing was sent to the Army Aviation Center by the officer who had it designed, Lieutenant General George P. Seneff (Retired). As a brigadier general, he was the first commander of the 1st Aviation Brigade from May 1966 to September 1967

RSI Report









AN INDEPTH description of the Army's rationalization, standardization and interoperability (RSI) program was presented in the September 1981 issue of the *Aviation Digest*. Since that time, several articles entitled the RSI Report have appeared. These articles have highlighted the accomplishments of international working parties/groups that are of interest to helicopter users.

Unfortunately, when standardization agreements (STANAGs) and quadripartite standardization agreements (QSTAGs) are ratified, aviation units have little, if any, immediate exposure to these agreements. The normal procedure is for each Training and Doctrine Command school/center to incorporate the contents of each document into their proponent literature. Several years may pass before the terms of the agreement become the standing operational procedure for an aviation unit. In an attempt to familiarize aviation units with the contents of standardization agreements, the *Aviation Digest* will print selected STANAGs and QSTAGs. The first such agreement is STANAG 3532, Transport of Troops by Helicopter.

Units which are subject to this agreement are encouraged to validate the content of the STANAG. If there are terms that the United States cannot accept, recommended changes should be submitted.

To ensure interoperability among national forces, it is incumbent upon all nations to adhere to the terms of each agreement. The results will be an effective fighting force that will deter aggression by a hostile nation.

STANAG 3532—Transport of Troops by Helicopter

1. *Aim:* The aim of this agreement is to establish standard procedures in order to facilitate the transport of troops or their personal equipment in helicopters.

2. *Agreement:* Participating nations agree that the procedures established below will apply when troops or their personal equipment are carried in transport helicopters.

3. *Definitions:* The following terms and definitions are used for the purpose of the agreement:

- **Chalk Number:** The number given to a complete load and to the transporting carrier (AAP-6). Where used in this STANAG, the term refers to aircraft loads.
- **Crewman:** A member of the helicopter crew who travels in the cargo/passenger compartment in certain helicopters. His duties include taking charge of the chalk troops from emplaning to deplaning.
- **Ready Position:** A designated place where a helicopter load of troops and/or equipment wait for pick-up. Normally this is between the 9 o'clock and the 3 o'clock position in the forward sector in visual contact with the pilot at approximately 30 metres (100 feet).
- **Aircraft Commander:** The aircrew member designated by a competent authority as being in command of an aircraft and responsible for its safe operation and accomplishment of the assigned mission.
- **Chalk Commander:** The commander of all troops embarked under one chalk number.

4. *Types of Helicopters:* These procedures are designed to be used with all types of transport helicopters engaged in tactical operations. The procedures only apply to helicopters which normally transport troops. When other helicopters are used to carry troops, the troops must be specially briefed.

5. *Preparation of Helicopters:* If the operation requires, a suitable deplaning rope or other lowering device will be fitted. For lowering stores, a light line longer than the deplaning rope, with a hook attached for the rapid attachment and detachment of loads will be fitted.

It is desirable to provide intercom and external radio facilities at the chalk commander's position.

In assault missions, the troop seats may be removed but safety belts must remain fitted or safety ropes fastened to the floor tie-down rings.

6. *Preparatory Briefing and Action:* To facilitate the planning and preparation of helicopter operations, standard operating procedures jointly approved by senior commanders are to be developed for both normal and short time reaction operations. For specific operations, the air and ground forces are to exchange information which should include the following:

- Time of pick up.
- Total number of troops to be lifted.
- Point of departure.
- Destination.
- Requirement for backloading.
- Operational data such as map references, organization and marking of loading and landing points, communications, preparation of schedules and alternate schedules, survival equipment, refueling and logistic support.
- Intelligence data—enemy positions, etc.
- Requirements of helicopter unit for support personnel, etc., at departure point and destination.
- Request for air/helicopter escort, fire support, command and control aircraft, etc.
- Action to be taken in the event of downed aircraft.
- Aircraft type, number of aircraft available and allowable load.
- Method of movement.
- Special airspace control measures.
- Lighting requirements for night operations.
- Diagram or sketch of seating arrangement of lift aircraft.

7. *Actions by Helicopter Unit:*

- Coordinate with the supported force.
- Ensure that supervision is provided to the

supported force during loading, tie-down and off-loading of personnel and materiel whenever possible.

- Establish timely liaison with the supported unit to provide for movement planning to include aircraft availability, allowable cabin/cargo load (ACL), special loading instructions, and the restriction on the use of chalk radio equipment in the aircraft.
- Provide necessary survival equipment including life jackets where necessary.
- Give a preflight briefing on emergency procedures to include location and use of all emergency equipment and exits.
- Brief aircrews, to include mission, weather, enemy ground situation and air defense threat, route of flight, communication procedures, method of movement, instrument flight rules/regulations (IFR) breakup and recovery procedures, downed aircraft procedures and night lighting requirements.

8. *Actions by Supported Unit:*

- Allocate chalk numbers to troops.
- Brief troops on the following points (assisted where necessary by helicopter unit): 1) The emplaning location of the helicopters for each chalk number. 2) The dangers inherent in operating in the close proximity of helicopters on the ground. 3) The necessity for weapons to be on safe and without a round in the chamber, and for them to be carried so as to avoid damage to the helicopter. 4) The removal or folding of radio antennae in order to avoid damage to the rotor blades. 5) Safety and emergency procedures. 6) The aircraft commander has final authority on all matters pertaining to the safe operation of the aircraft. 7) Troops will not throw items nor fire from the aircraft unless specifically authorized to do so by the aircraft commander.
- Station the troops in the ready position at the designated time.
- Ensure that the helicopter unit commander is briefed on the supported unit's mission.

9. *Emplanement:* The responsibilities of the chalk commander, on receipt of the signal to emplane (see Annex A), are:

- To lead his troops to the helicopter.
- To station himself near the door or ramp and assist his troops to emplane.
- To direct his troops to the correct position in the helicopter, if no crewman is present, and to emplane last of all, closing and locking the door where applicable.
- To ensure that safety harnesses/belts are secured and then to notify the crewman or pilot.

10. *In-Flight Procedure:* It is the responsibility of the pilot in command to ensure that communication is established with the chalk commander.

On approaching the landing point, the chalk commander should be informed of the helicopter's heading on touchdown and any other pertinent information that will change the troops preflight briefing, e.g., the exact position of the landing point.

11. *Deplanement:*

- On approaching the landing point the pilot is to signal "standby" (see Annex A) and ensure that the chalk commander is informed of any deplanement hazards.
- On receipt of the deplane signal (see Annex A) the troops are to release harnesses/belts and follow the chalk commander out of the helicopter.
- The chalk commander or his designated representative is to give the "troops clear" signal to the pilot or the crewman (see Annex A).
- When deplaning, especially on a slope, the chalk commander must ensure that his troops keep clear of the rotor blades by moving down slope from the helicopter.
- In carrier deck operations, the deplaning troops will be led off in a safe direction by a Flight Deck Guide.

12. *Deplaning From The Hover:* It may sometimes be necessary for troops to deplane by jumping out from a low hover, or by using ropes, ladders or other devices from greater heights. In such cases, troops must be specially briefed and trained. (See STANAG 3630—Emplaning and Deplaning at the High Hover.)

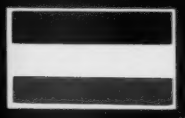
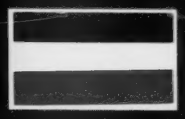
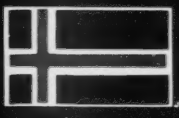
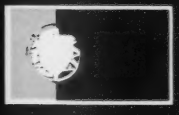
13. *Night Procedures:* The night signals are shown in Annex A.

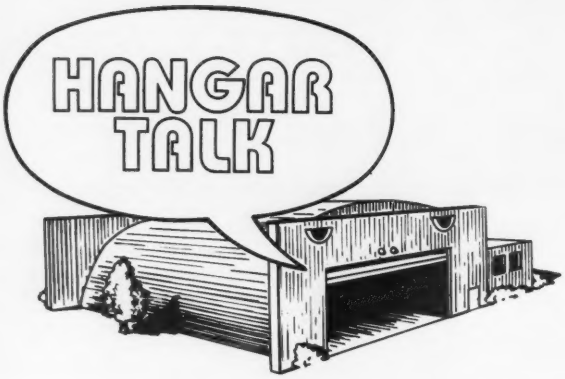
14. *Implementation of the Agreement:* This STANAG is considered to be implemented when a nation has issued the necessary orders/instructions to the forces concerned putting the procedures detailed in this agreement into effect.

If this article has generated any questions or requirements please contact Mr. Rush Wicker by writing: Commander, U.S. Army Aviation Center, ATTN: ATZQ-D-CC, Ft. Rucker, AL 36362.

ANNEX A—SIGNALS

ACTION	DAY	NIGHT
EMPLANE	"Thumbs up" by pilot or crewman	One flash of flashlight or emplaning light by pilot or crewman
READY TO TAKE-OFF	Intercom or tap pilot	Same as day
STAND-BY	Intercom and/or 2 short bell rings, or red light "ON"	Same as day
DEPLANE	Intercom and/or 1 short ring, or green light "ON"	Same as day
TROOPS CLEAR	"Thumbs up" by chalk commander or his designated repreresentative	Two flashes of flashlight by chalk commander or his designated representative
EMERGENCY	Intercom and/or a continuous bell ring or flashing red light	Same as day



Aeronautical Equipment Maintenance Management Policies And Procedures (TM 55-1500-328-25)

CW4 Kurt J. Porter
CW3 Robert W. Lunau
Directorate of Evaluation and Standardization
U.S. Army Transportation Center
Fort Eustis, VA

1. How are maintenance test flights categorized?

A. Intermediate and operational
B. Periodic and major
C. General and limited

2. How are maintenance test flights numbered on the DA Form 2408-13?

A. They are not numbered
B. Consecutively
C. They are given a letter designation

3. A maintenance test flight is defined as: A flight for which the primary mission is to determine . . .

A. Limitations
B. Capabilities
C. Airworthiness

4. The correct method of indicating a satisfactorily completed "maintenance operational check" in conjunction with the corrective action taken entry in block 18 of DA Form 2408-13 is:

A. MOC OK 19 Jul 82
B. MOC completed 19 Jul 82
C. MOC accomplished 19 Jul 82

5. Under which of the following conditions would you be required to perform a limited test flight?

A. Flight control linkage bolts replaced
B. Engine replaced
C. Nonadjustable flight control linkage reinstalled

6. Inspection/services/calibration of components on a calendar basis such as first-aid kits, weight and balance and aircraft inventory, etc., are considered to be what type inspection?

A. Phased inspection
B. Acceptance inspection
C. Special inspection

7. Which of the following is the correct entry on DA Form 2408-13 showing satisfactory completion of a test flight?

A. Test flight OK
B. Test flight completed 1100 hr 19 Jan 82
C. Aircraft test flown and released 19 Jan 82

8. Under which of the following conditions would a general test flight be required?

A. Following replacement of a flight control activator
B. When accepting an aircraft for a ferry mission
C. When a major repair has been performed on basic structure

9. What status symbol would be entered on the DA Form 2408-13 when an aircraft's intermediate, periodic or phased inspection is due?

A. Red "X"
B. Red "—"
C. Red "Ⓧ"

10. Under which of the following circumstances may inspection intervals be exceeded?

A. When conducting a ferry mission
B. When flying VIPs
C. Actual operational emergency

ANSWERS 1. C, para 3-1b 2. A, para 3-5g 3. C, para 3-1b 4. A, para 3-8 5. B, para 3-2c 6. C, para 2-3 7. B, para 3-5b 8. B, para 3-2b 9. A, para 2-1c 10. C, para 2-1c

AVIATION PERSONNEL NOTES

Command Selections

Headquarters, MILPERCEN, announced the names of officers selected for lieutenant colonel-level command assignments in fiscal year 1983. The following officers have been named to command aviation related battalions and squadrons in SC 15:

Aviation Troop Commands

Johnnie B. Hitt	Bruce P. Mauldin
Charles H. Webb	Bill G. Murphy
William A. Hall	Floyd E. Edwards
Edwin H. Henry	Robert N. Siegle
Robert E. Oakley	Robert D. Kerr
Byron W. Smith	Kenneth Chien
Michael G. Ball	Tommie A. McFarlin
Billy J. Miller	Roy E. Chambers
James M. Butler	Gerald L. Crews
William D. Loftin	

Key Personnel Changes

Lieutenant Colonel Robert H. Vandel reported in July as chief, Aviation Plans/Programs Branch. A Senior Army Aviator, he most recently served as chief, Education and Training Branch at Military Personnel Center (MILPERCEN). Major Michael K. Jennings, Aviation Management Officer for Specialty Code (SC) 71 in Aviation Plans/Programs Branch, departed in June to attend Command and General Staff College. His replacement is Major Samuel L. DeLoach, a Master Army Aviator, who arrived from the Air Command and Staff College at Maxwell AFB, AL. Lieutenant Colonel Ronald Adams, formerly commander of the 2d Combat Aviation Battalion, Korea, is now chief of the Aviation Management Branch.

Special MILPERCEN Selection Board

A special MILPERCEN Selection Board convened to consider 37 warrant officer aviator applicants for active duty as an exception to the "10/20" policy. Of the 37 applicants, 14 were selected. These officers need to apply for new aviation service orders in accordance with AR 600-105, para 3-3 E.

Unauthorized Use of Drugs and Alcohol Abuse by Aviators

A recent MILPERCEN msg dated 141345Z Jun 82, highlights the requirements of AR 600-105, "Aviation Service of Rated Army Aviators," as it applies to required actions against aviators who have been identified as using unauthorized drugs or as alcohol abusers. The purpose of the message is to seek aviation commanders' compliance with these requirements which include:

- Imposing a nonmedical suspension
- Referring the case to a flying evaluation board
- Notifying the flight surgeon
- Referring the aviator to the drug and alcohol abuse program.

U.S. Army Aviation Standardization Program

IN 1972, THE Chief of Staff of the Army, alarmed at the number of accidents and their associated loss of materiel and human resources, tasked the Army staff to implement a centrally managed worldwide Army Aviation Standardization Program with a goal to improve unit readiness, aviation safety and professionalism by using standard procedures and techniques. The Department of the Army (DA) Deputy Chief of Staff for Operations and Plans (DCSOPS) has responsibility for this program which is managed by the U.S. Army Aviation Policy Committee.

The U.S. Army Aviation Center (USAAVNC), Ft. Rucker, AL, is the proponent for the U.S. Army Aviation Standardization Program. In this capacity, USAAVNC serves as the DA preparing agency for applicable Army Aviation regulations and flight training and standardization literature. USAAVNC also conducts an active assistance and evaluation program for aviation training. This consists of flight standardization teams which assess the flight standardization and proficiency of aviators, unit trainers (UTs), instructor pilots (IPs), standardization instructor pilots (SIPs), instrument flight examiners (IFEs) and maintenance test pilots throughout the Army. These teams serve as an extension of DCSOPS. When evaluating units within major Army commands (MACOMs) in continental United States, the results are provided as input to the MACOM evaluation report. Annually, this information is consolidated and a report is submitted through the MACOM to the DA Aviation Officer. Outside continental United States MACOMs are given an annual evaluation and the report is submitted through the MACOM to the DA Aviation Officer.

ACTIVE COMPONENT
Aviation Standardization Committee Hierarchy

U.S. Army Aviation Policy Committee
MACOM Aviation Standardization Committees
Installation Aviation Standardization Committee
Unit Commander Standardization Instructor Pilot

Commanders at all levels implement the U.S. Army Aviation Standardization Program through aviation standardization committees. It is through the activities of these committees that the goal of the U.S. Army Aviation Standardization Program is achieved.

The first standardization committee level is the installation and area aviation standardization committee. These committees supervise and coordinate the command implementation of the U.S. Army Aviation Standardization Program and provide the commander a continuous assessment of the program's status. The chairman of this committee is the installation/area aviation officer.

The next committee level is the major command and numbered armies aviation standardization committee. These committees monitor the implementation of the U.S. Army Aviation Standardization Program. They provide the command a continuing assessment of the program. Subordinate installation/area aviation officers, who are chairmen of their respective installation/area standardization committees, serve as voting members of these committees.

The last and highest committee level is the U.S. Army Aviation Policy Committee. The committee consists of the following voting members:

- Deputy Director of Requirements and Army Aviation Officer, ODCSOPS (executive chairman)
- Director, Directorate of Evaluation and Standardization, USAAVNC (executive secretary)
- Representatives from each MACOM and aviation element

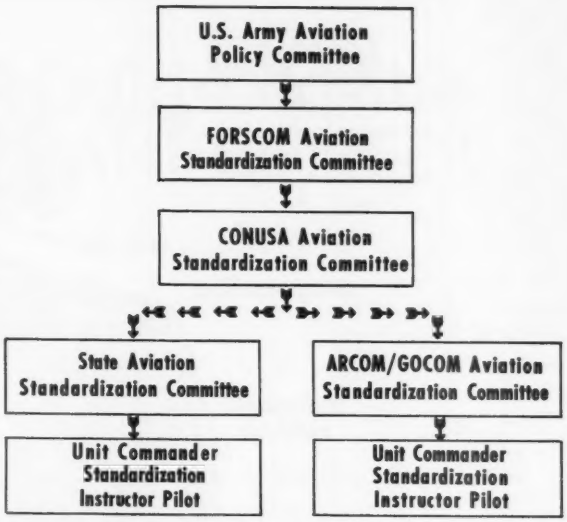
The U.S. Army Aviation Policy Committee recommends general policy for implementation of the U.S. Army Aviation Standardization Program. It reviews activities of subordinate aviation standardization committees and proposals affecting the capability of commanders to perform missions with aviation assets. The executive chairman, in coordination with the committee secretary, presents reports of Army Aviation Policy Committee meetings to the DCSOPS. From these reports the DCSOPS forwards recommendations to the Chief of Staff of the Army. Appropriate Army staff agencies are tasked by the Chief of Staff to implement those recommendations approved by the chairman.

This multilevel committee system is designed to provide problem solving groups composed of the best

qualified individuals to deal with aviation problems at each command level. Normally, when problems are identified by individual aviators, UTs, IPs, SIPs or IFEs at the flight line level, they are presented to the installation and area aviation standardization committee secretary in writing. The committee secretary will forward the issue to members of the committee in sufficient time (usually a minimum of 30 days) to allow each member to research and develop recommendations prior to the next scheduled meeting. These committees are required to meet at least semi-annually. When the committee meets, normally a 1-day general assembly of all members, all issues received by the secretary in time for proper staffing will be placed on the agenda. Any interested member may discuss an issue and make recommendations. All recommendations will be voted upon by the membership. Those recommendations approved by a majority vote will be forwarded to the commander authorized to convene the committee, for his approval and implementation if approved. If the recommendation exceeds the authority or capability of the commander authorized to convene the committee, he may elect to forward the issue to the next higher committee.

Issues submitted to the major command and numbered armies aviation committees are processed in much the same manner as those of the installation and area aviation standardization committees. However, this committee only meets annually. It is divided into specialized work groups, i.e., safety, flight standards, to discuss appropriate issues. After all issues have been addressed by work groups, the members meet in general assembly. In this assembly, the issues and the work group's recommendations are presented to all members for formal resolution. Recommendations of this committee are forwarded to the commanders authorized to convene the committee for approval. Copies of the approved recommendations must be given to each subordinate aviation standardization committee. Those issues not resolved by the major command aviation standardization committees are forwarded to the U.S. Army Aviation Policy Committee for final resolution.

The U.S. Army Aviation Policy Committee meets annually in conjunction with the U.S. Army Aviation Training Symposium. The voting members meet in a week-long session. During this meeting, the first 2½ days are devoted to intensive work group discussions which develop recommendations for each unresolved issue. Following the work group activity, the policy committee voting members meet in formal session to vote on all issues presented for resolution. Recommendations approved by this committee are forwarded to the DCSOPS and the Chief of Staff. Upon approval by the Chief of Staff, appropriate Army agencies are tasked to implement the recommendations.


U.S. Army Aviation Policy Committee
FORSCOM Aviation Standardization Committee
CONUSA Aviation Standardization Committee
State Aviation Standardization Committee
ARCOM/GOCOM Aviation Standardization Committee
Unit Commander Standardization Instructor Pilot
Unit Commander Standardization Instructor Pilot

RESERVE COMPONENT Aviation Standardization Committee Hierarchy

In 1981, 78 issues reached the U.S. Army Aviation Policy Committee. Issues such as tactical instrument checkrides and aircrew training manual task requirements were addressed. Unique to last year's policy committee meeting was the release of a messsage after the meeting to all commands effecting the immediate implementation of resolved issues. Those issues unresolved were tasked by the Chief of Staff for accomplishment. It should be evident that any issue that begins at the flight line and reaches the Chief of Staff has been thoroughly dealt with along the way. At each level, a serious attempt is made to resolve the issue. If, however, the issue cannot be resolved, it is forwarded promptly to the next higher committee. In this channel, an issue can originate at the lowest level, be addressed by experts at every command level and be implemented as a new policy or as a change to an existing policy in less than 1 year.

This year's U.S. Army Aviation Policy Committee is scheduled to meet 15 through 19 November 1982 at Ft. Rucker, AL.

DES welcomes your inquiries and requests to focus attention on an area of major importance. Write to us at: Commander, U.S. Army Aviation Center, ATTN: ATZQ-ES, Ft. Rucker, AL 36362; or call us at AUTOVON 558-3504 or commercial 205-255-3504. After duty hours call Ft. Rucker Hot Line, AUTOVON 558-6487 or 205-255-6487 and leave a message

Illustration by Jerry Byrd

A Lieutenant's Guide to the AVIATION WARRANT OFFICER

First Lieutenant Ronald M. Buffkin
B Company
501st Aviation Battalion (Combat)
APO New York

SINCE I'VE BEEN a commissioned aviator, I've developed a great deal of respect for aviation warrant officers. These men and women are truly the backbone of professionalism in our aviation units. In addition to doing most of the flying, they are required to spend the majority of their careers in aviation wherein they possess a wealth of experience. I can say I've learned a lot about aviation from most of the warrants in my unit.

There was, however, a serious lack of formal education and training in Officer Candidate School (OCS), my basic course and the initial entry rotary wing (IERW) course about the special breed of soldier known as the aviation warrant officer (AWO). Most precommissioning programs including Reserve Officers' Training Corps, the United States Military Academy and OCS offer little about the roles and functions of warrants, much less the AWO. Like most every level Specialty 15 aviator I attended a combat arms branch basic course which was great training for being an Infantry platoon leader, but poor preparation for my first job as a combat aviation unit section leader. This condition will become more typical as additional newly commissioned aviators come into Army Aviation and also with the restructuring of our combat aviation units.

The present IERW course produces fine aviators but contains little time to devote to teaching lieutenants and captains how to fight with and lead their aviation units. Army Aviation has some of the most sophisticated fighting equipment of any combat arm and its combat soldier, the AWO, is probably the most highly trained, technically capable fighter in the world. These skilled soldiers demand good, effective leadership. Filling a leadership position in an aviation unit poses unique challenges for the commissioned aviator. As Army Aviation develops into a viable fighting force on the modern battlefield, time and effort will have to be spent training newly commissioned aviators how to train, lead and go to combat with aviation units. Until that time, officers new to Army Aviation will have to learn about AWOs on the job.

While it's true that good officers can command respect and lead effectively in any environment, they can still benefit from knowledge about the nature of the soldiers they will lead. AWOs are a valuable asset to Army Aviation and their retention in the future will be affected by the quality of leadership they see from their chain of command as well as the degree of concern they get from those junior leaders with whom they come into contact with daily. The following is intended as a primer for those lieutenants who will soon find themselves as section or platoon leaders in aviation units. This guide is based on my observations in a combat aviation unit and perhaps will aid in understanding the AWO.

A "Mister" Is Not A "Chief." Even though my *Officer's Guide* says that the warrant officer is addressed as "Mister" or "Miss" or "Chief" as appropriate, the AWO does not prefer to be called Chief. It's a small

point but the AWOs use this formality to distinguish themselves from their nonrated contemporaries. I first learned of this quirk at Ft. Rucker, AL, and it has since proved to be a universal maxim for the AWOs.

Rely On Their Expertise. Because of the amount of time AWOs spend in aviation, they have the potential to become veritable experts in Army Aviation. They can become skilled in the "nuts-and-bolts" of the business to a greater degree than can commissioned aviators. Most experienced senior warrants are more than willing to help a new aviator. They will not expect you to know everything, but they will expect you to ask them if you need help.

Never Discuss Pay Or Privileges. With the passage of the 1982 Military Pay Bill, the inequality of flight pay, which has long been a sore spot with the AWO, has been corrected. Still, career recognition and other differences between the commissioned and warrant aviator structure continue to be sources of irritation. I've learned that talk of who gets more pay or opportunities for schooling can only make for friction between the AWO and commissioned aviators. As a leader, the commissioned aviator cannot afford to participate in discussions of this type.

Treat Them As Officers. My TAC (training and counseling) officer used to say, "An officer is an officer is an officer." This means that AWOs are extended the same privileges and respect as commissioned officers. To allow anything less is to detract from the important role the AWOs play in the Army. Their warrant from the Secretary of the Army makes their status as equals clear.

Be A Leader. Commissioned aviators are leaders. It is not unusual for second lieutenants to be AMCs (airmission commanders) for a multiaircraft tactical mission. Even though they may not have the flying experience level of the CW2s and CW3s in their flight, they are in the position of leadership. Your warrants will expect and demand that you lead by example and make the type of quality decisions necessary to ensure safety and mission accomplishment.

Develop Teamwork. Like all combat units, aviation sections and platoons are bonded by teamwork. To function as an effective member of the combat arms, aviation teams and sections have to be cohesive fighting elements. It's easy to lose sight of this considering the amount of individual training needed to keep aviators proficient. In addition, having different levels of experience tends to keep the unit from operating as a team. Train like a team, fight like a team, win like a team!

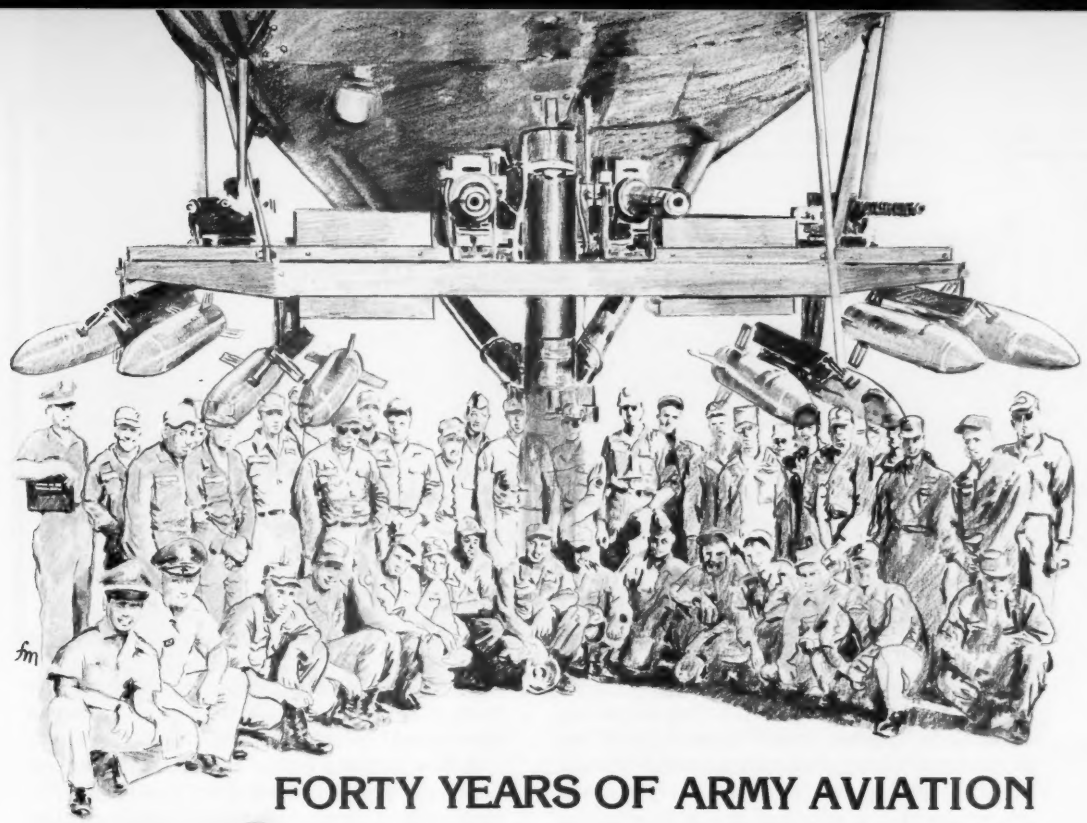
Set The Example Of Professionalism In Flying. Because the development of commissioned aviators is directed toward a different goal than is that of the AWOs, you may find yourself away from the stick more than you'd like. Remember that you're still an aviator and expected to keep informed and qualified. The quickest way to lose the respect of a CW3 or CW4 is to allow flight in very marginal weather or to otherwise disregard aviation safety.

Senior Warrants Tend To Stagnate. I thought I might have been wrong on this one, but after talking with other lieutenants in my unit, I know I'm not. The challenge is for aviation leaders to provide the kind of training and leadership that will stimulate the senior warrants to give their maximum effort. There's much to be learned from senior warrants—allow them to share the benefits of their experience with others.

Leadership requires practical application between the leader and those that are led. The right combination plus competence with the tools of the trade (in our case, helicopters) will produce positive results.

What works with infantry and tankers may not be effective with the AWOs. While the future leaders in Army Aviation have their first exposure to the AWOs when they report to their units, they don't need to rely on trial and error to develop the skills of leading them. A possible solution could be the addition of blocks of instruction to precommissioning programs, branch basic courses and/or IERW courses that deal with the role of the AWOs in aviation organizations.

The Aviation Center could also develop a correspondence program that deals with employment and leadership of combat aviation units. This self-contained instruction would be aimed at newly commissioned aviators to provide them with an introduction to what they can expect in their new units. Perhaps even the Warrant Officer Career College, with its vast amount of talent and experience, could be tasked with defining the skills needed in junior aviation leaders. In any case, if Army Aviation is truly expected to develop into an effective member of the combat arms, *our* combat leaders should be given the same preparation toward aviation that the other combat arms provide their lieutenants.



FORTY YEARS OF ARMY AVIATION

Part 4: ARMED HELICOPTERS

Richard K. Tierney Editor, *Aviation Digest*

"Vanderpool's Fools"

Brigadier General Carl I. Hutton, commander of the Aviation School at Camp Rucker, AL, in 1956, was aware of various armed helicopter experiments that had been conducted in the Army since the Korean War.

In 1953, the 24th Infantry Division had experimented with a makeshift grenade launcher on an H-13 Sioux. Also, the Ballistics Research Laboratory at Aberdeen Proving Ground, MD, unsuccessfully worked with 2-inch rockets fired from 5-foot tubes mounted on an XH-32 Hiller. Then, a Sky Cavalry experiment was included in Exercise Sagebrush in 1955, with an unfavorable after action report written by nonaviation evaluators.

Discouraged at the reports he was receiving about armed helicopter experiments, General Hutton decided to take matters into his own hands. In June 1956, he asked Colonel Jay D. Vanderpool to take on a special project of building and testing weapons systems to be used on helicopters.

Although not an aviator, Colonel Vanderpool accepted the challenge with much enthusiasm because he had formed ideas about arming helicopters from his experiences in World War II and Korea. He started with weapons left over from the unsuccessful "Project Able Buster" which had concentrated on arming fixed wing aircraft and only briefly considered helicopters before discounting them as "poor performers."

The basis for General Hutton's actions was a training memorandum from General

Brigadier General Carl I. Hutton

"Vanderpool's Fools"

Officers

CPT Stanley E. Ballentyne	LT George F. Blanchard	CWO John L. Lawlor
CPT Ernest L. Boswell	LT Thames M. Economos	CWO Cecil W. Williams
CPT Charles W. Jones	LT Robert A. Jones	CWO Thearon M. Cross
CPT John R. Ford	LT Robert R. Chedester	CWO James D. Lombard
CPT Howard A. Huntsman	CWO Charles L. Brameier	CWO Lawrence C. Hammond
CPT John D. Roberts		CWO Clarence J. Carter

Enlisted Men

MSG L.O. McDonald	SGT J.C. Johnson	PFC R.P. Somerville
MSG W.J. Quinn	SGT H.M. Mills	PFC H. Wyatt, Jr.
SFC J.M. Bingham	SGT L.L. Prine	PVT R.E. Abbott
SFC W.C. Cooper	SGT E.E. Spaichler	PVT W.E. Coursey
SFC J.H. Gladson	CPL K. Gombooz	PVT A.C. Fordyce
SFC W. Jenkins	CPL O.H. Haughey	PVT J.W. Garrett
SFC J. Rosado-Rodriquez	CPL G.L. Roberts	PVT H.E. Hill
SFC M.R. Sherrer	SP3 J.J. Graham	PVT F.A. Johns
SFC P.J. Soublet	SP3 E. Harris	PVT S.H. Kmiec
SFC A. Thompson	SP3 A.E. Mason	PVT E.J. Konzelman
SFC E. Vasquez	SP3 M.C. Overman	PVT D.G. Lewis
SFC F.E. Weedon	PFC C.W. Ayers	PVT R.J. Long
SP1 L.H. Weeks	PFC J.E. Davis	PVT M.R. Mendoza
SGT A.B. Andrews	PFC J.B. Elliott	PVT D. Porter
SGT R.E. Coker	PFC C.J. Gahn	PVT A.J. Rogers
SGT R. Gates	PFC M.R. McCully	PVT J.H. Spivey
SGT L. Hopkins	PFC R. Ricks	PVT W.D. Watson

Willard Wyman, commander of the Continental Army Command, directing the development of a highly mobile task force. In an exchange of correpondence, General Hutton obtained permission from General Wyman to proceed with his experiments with existing helicopters. As Colonel Vanderpool observed, "General Wyman did not tell us to use armed helicopters, but neither did he tell us not to."

Colonel Vanderpool started out with a few helicopters, a few rockets and no gunsights. His biggest asset was a group of people (including wives) who believed in the armed helicopter and who were willing to give up their evenings and weekends to go about the business of arming the helicopter. They often had working lunches and midnight snacks that the wives prepared. Both General Hutton and Colonel Vanderpool shared the hours—and lunches or snacks. Those pioneers were called "fools," but before long they were reverently called "Vanderpool's Fools"—and it became a distinct honor to be a member of this select group.

General Hutton commanded the Aviation School until June 1957. He was succeeded by Major General Bogardus S. Cairns who was killed in an H-13 crash in December 1958. He was followed by Major General Ernest F. Easterbrook who commanded from June 1959 to March 1961. Both of these men continued developmental work on Army helicopters with the same enthusiasm as General Hutton, the man who many consider to be the "father of the armed helicopters."

A few months before he left Fort Rucker, General Hutton directed on 5 March 1957 that a Sky Cavalry Platoon (Provisional) be organized. By 8 July the unit, dubbed "Sky Cav," was operating with 11 officers, 16 enlisted and 10 helicopters.

To eliminate confusion over the many types of "Sky Cavalry" that existed, the unit was redesignated Aerial Combat Reconnaissance Platoon, Provisional (Experimental). The provisional was dropped 24 March 1958 and the unit was reorganized as the 7292d Aerial Combat Reconnaissance Company. Throughout most of these name changes the unit was generally referred to as ACR Company, even after 25 March 1959 when it was redesignated the 8305th Aerial Combat Reconnaissance Company.

No matter what the name was, the quality remained the same as the ACR Company developed and refined nap-of-the-earth flight and gunnery techniques and tactics. ACR also continued to improve and build new gun kits.

The ACR Company conducted numerous demonstrations of the firepower and tactics of its H-13s mounted with 30 caliber machine-guns, and of the H-19s, H-21s and H-34s firing 2.75 and 4.5 inch rockets in support of

An ACR Company CH-34 Choctaw armed with 4.5 inch rockets and a .50 caliber machinegun.

transport helicopters carrying troops into "combat areas."

On 27 March 1957, ACR left Fort Rucker to give the first offpost glimpse of its emerging airmobile tactics doctrine. Its members conducted exercises before the Armor Association at Fort Knox, KY, they impressed members of an industrial symposium at Fort Benning, GA, and they conducted their most significant demonstration on Army Aviation's birthday, 6 June 1957, before an Army Aviation-Industrial Symposium at Fort Rucker. They also traveled to Aberdeen, MD, for the Ordnance Association Conference and even participated in exercises as far away as Fort Bliss, TX.

Captain Stanley Ballentine was the first commander of the original ACR Company. Subsequent ACR commanders were Major Frank G. Brown, Captain Harry E. Archer, Major Carrol M. Cook Jr., Major Philip D. Jones, Major Robert M. Shoemaker and Captain Robert E. Oberg.

Some of the ACR Company members were dubbed with nicknames that reflected their specialties. CWO Lawrence C. Hammond was "Chief Piddler," CWO Clarence J. Carter was "Chief Scrounger," Captain W.F. Gurley was "Chief Operator," and CWO James D. Lombard was "Chief Inventor."

"Vanderpool's Fools" worked without formal research and development assistance, or evaluators other than themselves. They scrounged equipment from salvage yards and were happy to receive "hand-me-down" armament parts from the Air Force, Navy and Marine Corps. They worked in the post machine shop at first, but soon set up a shop of their own at Tiger Port, an onbase heliport at Fort Rucker. Anyone who had a helicopter armament idea could have it built and tested. Many of their ideas evolved into standard helicopter armament systems.

The outstanding work of the ACR Company was recognized throughout the Army and was chiefly responsible for the development of armament systems and airmobile tactics in Army units around the world. By late 1962, the Army's airmobile/armed helicopter program had reached a point where it was ready to be tested in an air assault division. Plans called for the ACR Company and its expertise to be a part of the nucleus of a test division.

On 24 September 1962, the 8305th ACR Company became Troop D (Air) 17th Cavalry. Troop D then was moved to Fort Benning, GA, where in 1963 it became part of the 3d Squadron, 17th Cavalry Regiment, 11th Air Assault Division (Test). Later Troop D was redesignated Troop A and the 3/17th Cavalry

became 1/9 Cavalry and was deployed to Vietnam as part of the 1st Cavalry Division (Airmobile).

Armywide Growth

As the ACR Company grew at Fort Rucker, it began to receive assistance from the Combat Developments Office and the Army Aviation Test Board (today known as the Developmental Test Activity) which in 1961 organized an Armament Branch to test helicopter weapons systems. On the training side, the Aviation School formed an Armament Division in its Department of Tactics to assist in the training of students in armament subjects and to work on the development of armament systems.

In 1962, the Office of the Project Manager for Aircraft Weaponization was created under the newly organized Army Materiel Command in Washington. Lieutenant Colonel Nelson L. Lindstrand Jr. was first project manager and was charged with bringing all of the helicopter armament programs under one roof. He assumed responsibility for administering the ACR Company-originated XM-1 and XM-1E1 30 caliber machinegun systems and initiating the follow-on XM-2 system. But Colonel Lindstrand's office also had many other helicopter armament programs from throughout the Army to direct.

ACR Company's tactical exercises resulted in an order from the commanding general of the Continental Army Command in 1959 to the Armor School to develop an Aerial Reconnaissance and Security Troop (ARST). The ARST, patterned after the ACR Company, was formed in January 1960 at Fort Benning as a test unit of the 2d Infantry Division. It underwent testing and training at Fort Stewart, GA, and in Europe during "Exercise Winter Shield I." ARST was an unqualified success, performing the traditional armored cavalry mission. In 1962, as the Army division was reorganized into the ROAD concept, the air cavalry troop was made organic to the division's armored cavalry squadron.

In addition to developing ARST, the Armor School's 64th Transportation Company experimented with 2.75-inch and 4.5-inch rockets on the CH-34 Choctaw.

The commanding general of U.S. Army Europe was impressed with the ACR Company experiments at Fort Rucker and directed the Seventh Army commander to integrate the armed helicopter into certain units. The task was given to Brigadier General Hutton who had just been reassigned to Europe from the Aviation School. Several of "Vanderpool's Fools" who had been transferred to Europe (and were already working on weapons systems) went to work and developed the Seventh Army armament kits. Each infantry division in the Seventh Army was issued kits and their instructor pilots received special training in their use.

Major General Herbert B. Powell, an Army aviator who commanded Fort Benning's Infantry Center, was impressed with the work of the ACR Company. In July 1957, he asked Major William A. Howell to conduct some experiments in arming helicopters. CWO James E. Ervin Jr., was made project manager and rounded up a crew to help him. After obtaining machineguns and equipment from Fort Rucker, and with the help of Sikorsky representatives, the group unveiled the world's most heavily armed helicopter, a CH-34. It was armed with two AN-M 20 mm machineguns, two 50 caliber aerial machineguns, four 30 caliber aerial machineguns, two pods of 20 2.75-inch rockets each, two 5-inch high velocity aerial rockets, two additional 30 caliber aerial machineguns in the left-side aft windows, and one 50 caliber machinegun in the cargo door. The aircraft underwent experiments, but numerous technical problems caused it to eventually fade from the scene.

As the air cavalry troops came into existence in the ROAD divisions, additional experimental gun kits were developed. One of the

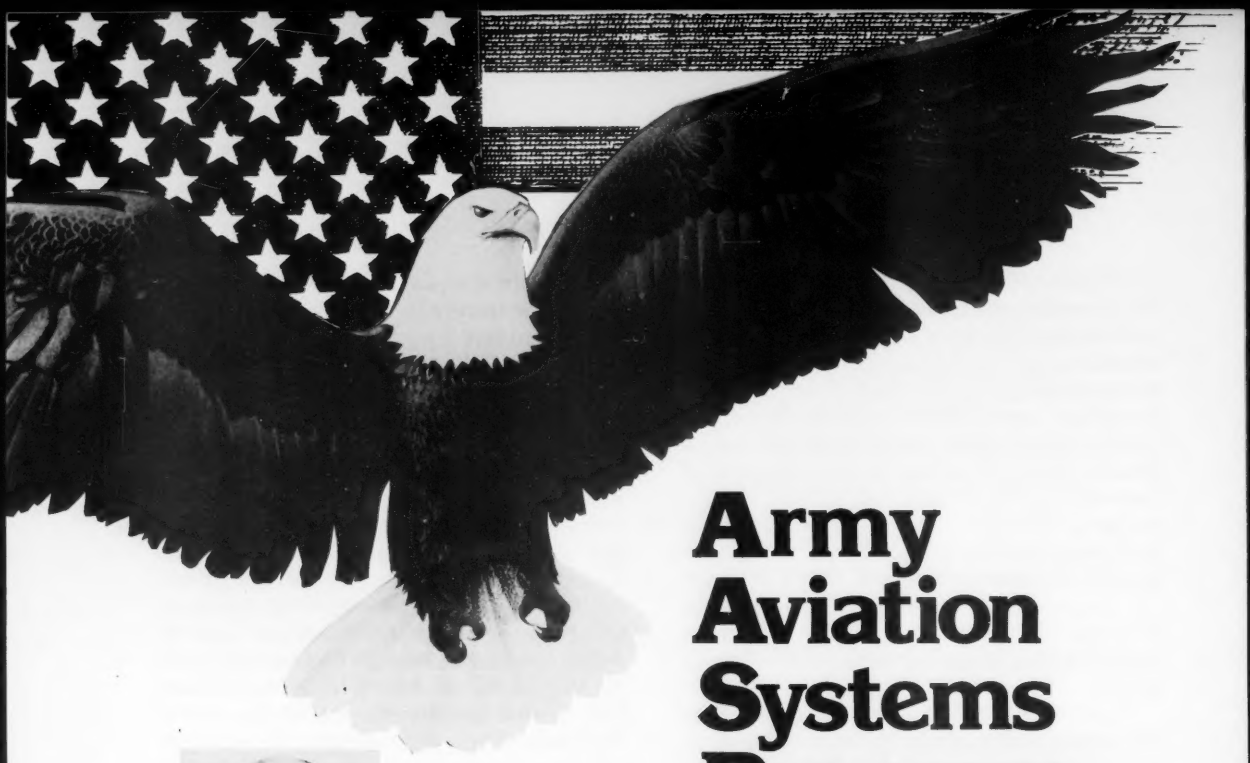
most successful was the "Old Ironsides" machinegun kit, developed under the supervision of Lieutenant Colonel John C. Hughes, commander of the 501st Aviation Battalion of the 1st Armored Division at Fort Hood, TX. "Old Ironsides" consisted of a twin 30 caliber machinegun system and was mounted on the OH-13. Twin 30 caliber machineguns also were installed on the battalion's troop-carrying UH-1Bs. Other kits designed and built included 50 caliber M-2 and M-3 kits for the UH-1B and the Womack Kit, named for its designer CWO Clemuel H. Womack. It included twin 30 caliber machineguns and two 2.75-inch launcher pods of 24 rockets each.

The UTT became the United States' first armed helicopter company when it was activated in Okinawa 25 July 1962. It was deployed in October 1962 under the command of Lieutenant Robert Runkle to Thailand and then Vietnam to fly escort for lift helicopters (see Part III: COMBAT, Vietnam). CWO Clarence Carter, a former member of the ACR Company, developed most of the original helicopter armament systems for the UTT. In Vietnam, Major Luther Loller and CWO Cleatus Heck developed larger weapons systems for the UTT. CWO Womack (who had been with the 1st Armored Division) joined the UTT and was responsible for an improved 2.75-inch rocket launcher for the UH-1, a smoke tank and a modified M-6 quad machinegun system that was the forerunner of the M-16 kit (a 2.75-inch pod added to the M-6 machineguns).

The Field Artillery School, Fort Sill, OK, organized the Committee for Aerial Artillery Test and Evaluation in March 1963. Its first project was a CH-34 armed with one 10-tube 4.5-inch rocket pod on each side. It was placed on line with artillery pieces in May 1963 as part of one of Fort Sill's famous firepower exercises. The results were impressive as the single CH-34 delivered the same firepower as a battalion of 105 mm Howitzers. This led to the organization of the first Aerial Artillery Battery (Provisional) in May 1963. It was intended for that battery to be equipped with UH-1Bs armed with the XM-3 system (2.75-inch rockets). But the system was not available and the CH-34 with its 4.5-inch rockets was used instead.

Those in the Army today who are charged with the development of our modern armament systems such as the TOW (tube-launched, optically-tracked, wire-guided) missile, the HELLFIRE and the Stinger, are facing many of the same obstacles experienced by "Vanderpool's Fools." But they have inherited the spirit and dedication that the ACR Company members had, as evidenced by the improved AH-1S fully modernized Cobra and the emergence of the AH-64 Apache attack helicopter. They have the grit, and are succeeding in developing the aircraft, weapons and tactics with which Army Aviation can, as a member of the combat arms, destroy the enemy. and his armor in the AirLand Battle.

The Old Ironsides Kit consisted of two .30 caliber machineguns on an OH-13.



Army Aviation Systems Program Review '82

Organization And Force Structure Panel

Major General John W. Woodmansee Jr.
Commanding General
2d Armored Division
Fort Hood, TX
Panel Chairman

During the conduct of the AASPR, MG Woodmansee was deputy commanding general, V Corps, United States Army Europe

THE ORGANIZATION and Force Structure Panel (figure 1) addressed five major issues (figure 2) which were derived from the findings of the Army Aviation Mission Area Analysis (AAMAA) and analysis of the aviation organizations of 1986 as applied to the total Army analysis (TAA-88) force structure.

CONUS/OCONUS

The first issue considered was the fact that the current CONUS (continental United States) vs. OCONUS (outside continental United States) aircraft distribution program is, in some cases, not supportable. In order to maintain the current personnel assignment philosophy of 3-year stabilized CONUS tours, the CONUS base must contain sufficient aviation force structure to provide for stable tours in both CONUS and OCONUS. In a long tour area, such as Europe, Hawaii, Alaska and Panama, the CONUS base must contain roughly one mechanic or pilot to support each one that is forward deployed. For short tour areas such as Korea, we need to have three people in the CONUS base to support each one stationed overseas. If the CONUS base cannot support the OCONUS distribution, we must overtrain, hand manage and accept personnel turbulence in the affected aviation officer, warrant officer and enlisted specialties. This has an obvious impact on morale, stability, unit cohesion and

personnel retention. Failure to solve the distribution issue may result in an imbalance in 12 of the 24 enlisted aviation military occupational specialties (MOSs). We simply must solve the distribution issue.

Opportunities available to address this issue include: maintain Alaskan medium lift helicopter companies in the active force; cancel plans to increase stationing of aircraft overseas; and expedite self-deployability and strategic airlift plans for selected aircraft, particularly scout and attack.

Issue two referring back to issue one, addressed the point that decisions on attack and scout aircraft distribution are further complicated by the fact that currently programed attack and scout airframes will not support the TAA-88 force structure. More airframes should be programed for future procurement. If this is not possible, the panel offered the following as options to alleviate this problem:

- Reducing some requirements and deferring procurement of some aircraft
- Inactivating reserve component units
- Deferring activation of planned regular force units and
- Procuring UH-60 Black Hawks and AH-1 Cobras in lieu of some additional AH-64 Apaches for a high-low mix of attack aircraft.

While issues one and two concerned the development of stationing and acquisition strategies to support the Army, issue three addressed the absence of aircraft in war reserve stock (WRS) and prepositioning of materiel configured to unit sets (POMCUS). Our AirLand Battle doctrine for the future requires extensive use of aviation assets. The cavalry brigade (air attack) within each division and extensive aviation resources at corps under Army 86 add a significant dimension of firepower and maneuver, as well as combat service support to the combined arms team. We cannot expect our NATO (North Atlantic Treaty Organization) reinforcing divisions to be trained, organized and equipped to execute this doctrine, and then fall in on POMCUS of their ground equipment and fight without their aviation. There is no reason to expect the home station aviation assets of our current POMCUS divisions to be with them in the initial battles. In addition to the absence of aviation from the reinforcing divisions, the aviation assets of the forward stationed units will suffer a proportionate amount of combat damage and attrition. If our commanders are to retain the combat effectiveness afforded them by aviation forces, they must be provided replacements for their battle losses. Although we have long recognized the need to replace attrited ground combat systems and have developed an acquisition strategy which provides replacements from war reserve stocks, we do not have a similar acquisition strategy for aviation systems. Consequently, we have no replacement for our attrited aviation assets.

In short, the absence of WRS and POMCUS stocks means that the six NATO reinforcing divisions cannot expect to have their combat aviation forces with them during initial combat (figure 3). Neither are there provisions for immediate war reserves of aircraft to match the ground system reconstitution capability. These considerations are based on the regulatory restrictions of AR 710-1 and SB 700-40 which preclude aircraft being placed in either war reserve stock or POMCUS.

In order to solve this problem, the panel's opportunities for solution again included exploiting self-deployability for the AH-64, CH-47 Chinook, UH-60 and requiring that all future aircraft be self-deployable. Next, the tests currently being conducted in Europe to determine if aircraft can tolerate extended storage should be continued. Finally, since Army Aviation is a combat arm and vital to the execution of

MG WOODMANSEE (Chairman)	DCG, V CORPS, USAREUR
MG ANSON	CHIEF, FORCE MOD, HQDA
MG ARTER	CG, MILPERCEN, HQDA
MG ELTON	CG, 9TH ID (HTTB), FORSCOM
MG FRENCH	CG, SSC, TRADOC
BG TUTTLE	DIR, FORCE MGT, HQDA
LTC MACWILLIE	DCD-FD, USAAVNC, TRADOC

AASPR

FIGURE 1: Organization and Force Structure Panel

- CONUS VERSUS OCONUS
  - —AIRCRAFT DISTRIBUTION IMBALANCE
- SUPPORTING THE FORCE
  - —AIRFRAMES ARE INADEQUATE FOR TAA 88
- WRS AND POMCUS
  - —ABSENCE OF AIRCRAFT
- SUSTAINED OPERATIONS
  - —AVIATION MANNING IS INADEQUATE
- WARTIME FLYING HOURS
  - —CURRENT PROGRAM IS INADEQUATE

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FIGURE 2: Panel Issues

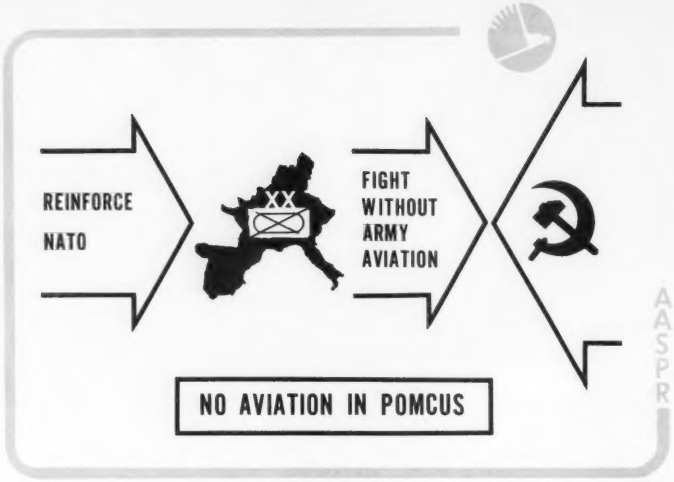


FIGURE 3: Combined Arms Employment

our AirLand doctrine, the panel proposes that the Army revise its regulations and develop an aviation acquisition strategy which includes war reserve stocks.

In addition to the aircraft distribution and acquisition difficulties for supporting the programed force, the panel addressed issue four which was that the manning in today's aviation units is inadequate for the conduct of sustained operations. We are the only service in the Department of Defense (DOD) in which the requirements for pilots are based on a one-to-one pilot-to-aircraft seat ratio. All other services have a greater ratio based upon aircraft type and mission profile. For example, the minimum aircrew for U.S. Air Force HH-53 and HH-3 aircraft is 1.50 and 1.25 pilots per seat respectively and the U.S. Marine Corps computes AH-1J requirements at 1.2 pilots per seat.

To address this issue, Headquarters, Department of the Army (HQDA) directed the U.S. Army Aviation Center at Ft. Rucker, AL, to conduct the Army Aviation Personnel Requirements for Sustained Operations (AAPRSO) study. The purpose of the study was to determine the required ratio of pilots to aircraft seats and the number of maintenance personnel to conduct sustained operations in a mid-intensity European conflict. In August 1981, HQDA validated the pilot-to-seat ratios; however, the recommendations on maintenance personnel requirements were deferred by HQDA pending receipt of data from the new Manpower Authorization Criteria (MACRIT) study. The resulting aircrew ratios in figure 4 are derived from different unit and aircraft mission profiles. Application of these ratios to the Army Aviation force structure will increase aviator requirements by about 30 percent or 3,750; of these, about 300 will be Active Army requirements to support the AH-64. To meet these requirements with minimal increase in Active Army strength, the Aviation Center is designing table of organization and equipment (TOE) sustainment units. Sustainment units for selected active Army Aviation units can be filled from Active Army, National Guard, Army Reserve and Individual Ready Reserve (IRR) personnel resources. Guard and Reserve aviation units provide sustainment for their own units, in addition to providing a means of filling Active Army sustainment units. IRR personnel resources provide a recruiting base for Guard and Reserve units.

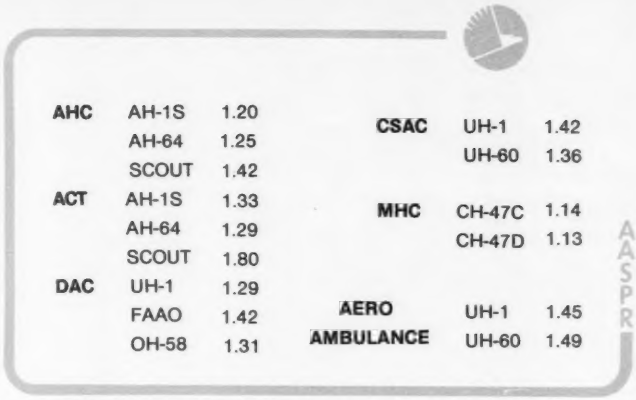
The panel's opportunities for solution provide the basis for proceeding with the AAPRSO implementation plan. HQDA should approve the AAPRSO implementation methodology of using Reserve Component sustainment units and direct Forces Command to conduct an evaluation of the methodology using the divisional attack battalion structure discussed in our example. Additionally, Training and Doctrine Command and the Aviation Center should continue to develop the implementation plan for the Army; and as information becomes available from the new MACRIT study and Combat Service Support Mission Area Analysis (CSSMAA), sustainment units will be revised to incorporate maintenance personnel requirements. Obviously adjustments to the training base will be required to support implementation.

The fifth and final issue addressed wartime flying rates which are the basis of logistical planning and support for aviation. In order to exploit the capabilities of our enhanced units and the combat potential of our aircraft, the wartime flying hour program must be increased. Flying hour rates are critical to force structuring as well as logistical support. Logistical support for aviation is currently based on the flight hour requirements shown in the left column of figure 5, the current DA-approved rates in hours per day. The AAMAA support basis in terms of flying hour rates is shown in the right column. The CH-47 hours are taken from the AAPRSO study. These rates will be updated by the CSSMAA now underway. However, approval of these flight hours will generate additional costs at the wholesale level in depot stockages and in stockage of authorized

stockage list/prescribed load list at the retail level, while class III/V (petroleum and solid fuels/ammunition) stockages will also be increased at both levels.

Adoption of the AAMAA flight hours will provide commanders increased logistical support for combat surges and enable them to exploit more fully the capabilities of their aviation assets. These hours will be used for the CSSMAA, which will define increased aviation logistical and maintenance requirements. Furthermore, a Middle East wargame should be conducted for the rapid deployment forces to validate the flying hours required to support that mission; and a maintenance manpower logistic analysis should be conducted for all aircraft to refine maintenance requirements to support the force structure.

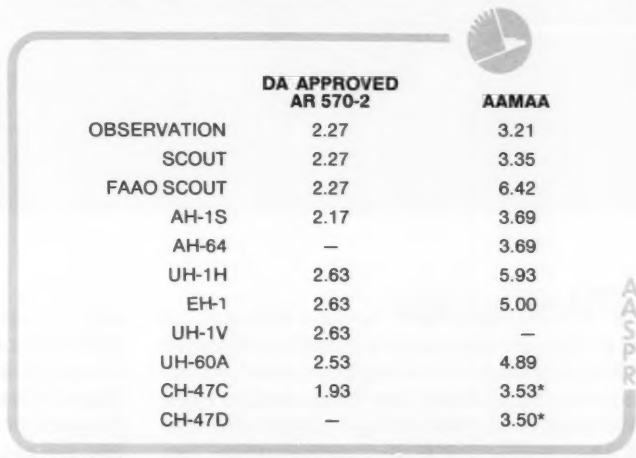
That concludes the five issues which required significant DA attention and revision. Additionally, the panel offered the following observations. Since these issues were developed based upon the TAA-88 force structure of 5 corps and 26 divisions, it is important to recognize that, as the TAA process continues, aviation requirements will increase proportionately. The issues addressing aircraft shortfalls, war reserve stocks and POMCUS require timely resolution to prepare for future Army goals. The recently implemented DA warrant officer retention initiatives, along with increased training rates, have begun to improve the warrant officer retention problem and aviator shortfall. These initiatives must be continued because the projected loss of warrant officers to retirement increases significantly beginning in FY 1985. Full implementation of the DA career management field (CMF) 67 study recommendations should correct the grade structure imbalances, improve personnel management and increase retention within this career management field. The recent scrub of the heavy division 86 organization resulted in removing doorgunners from the TOEs and placing these positions in augmentation documents. Doorgunners provide self-protection for utility and medium helicopters. Therefore, these positions should be included in sustainment units for our high priority organizations instead of augmentation TOEs. Additionally, doorgunners should have a CMF 67 MOS to provide additional maintenance capability to those organizations. And last but not least, the medium helicopter company (MHC) and the transportation aircraft maintenance company (TAMC) are not structured in accordance with Army 86 methodology. The Army 86 studies emphasized smaller company-sized organizations which could be effectively commanded by captains as company commanders. Both the MHC and TAMC are commanded by majors and have in excess of 250 personnel in each organization. The panel recommended that the U.S. Army Transportation School, Ft. Eustis, VA, restructure these units using the Army 86 methodology.



AHC	AH-1S	1.20	**CSAC**	UH-1	1.42
	AH-64	1.25		UH-60	1.36
	SCOUT	1.42			
ACT	AH-1S	1.33	**MHC**	CH-47C	1.14
	AH-64	1.29		CH-47D	1.13
	SCOUT	1.80			
DAC	UH-1	1.29			
	FAAO	1.42	**AERO AMBULANCE**	UH-1	1.45
	OH-58	1.31		UH-60	1.49

AASPR

FIGURE 4: AAPRSO Aircrew Ratio



	DA APPROVED AR 570-2	AAMAA
OBSERVATION	2.27	3.21
SCOUT	2.27	3.35
FAAO SCOUT	2.27	6.42
AH-1S	2.17	3.69
AH-64	—	3.69
UH-1H	2.63	5.93
EH-1	2.63	5.00
UH-1V	2.63	—
UH-60A	2.53	4.89
CH-47C	1.93	3.53*
CH-47D	—	3.50*

AASPR

FIGURE 5: Wartime Flying Hour Requirements *AAPRSO STUDY

NOTE: My sincere appreciation to LTC Steve MacWillie, Chief, Organization and Force Structure Branch of the Directorate of Combat Developments, U.S. Army Aviation Center, Ft. Rucker, AL, and CPT (P) Josef Reinsprecht as well as the panel members for their contributions.

Pilot Error, Human Error

Staff Sergeant (P) William C. Hawkins

Pilot error is not a term that pilots, civilian or military, take kindly to. We have attended various, demanding courses of instruction both on the ground and in the air that have culminated in our becoming "pilots." We feel that when a member of our "select group" has been indicted by the term "pilot error" it questions the capabilities and attitudes of all of us. We feel that it is a phrase that investigators sometimes use when they can't ascertain the "true" cause.

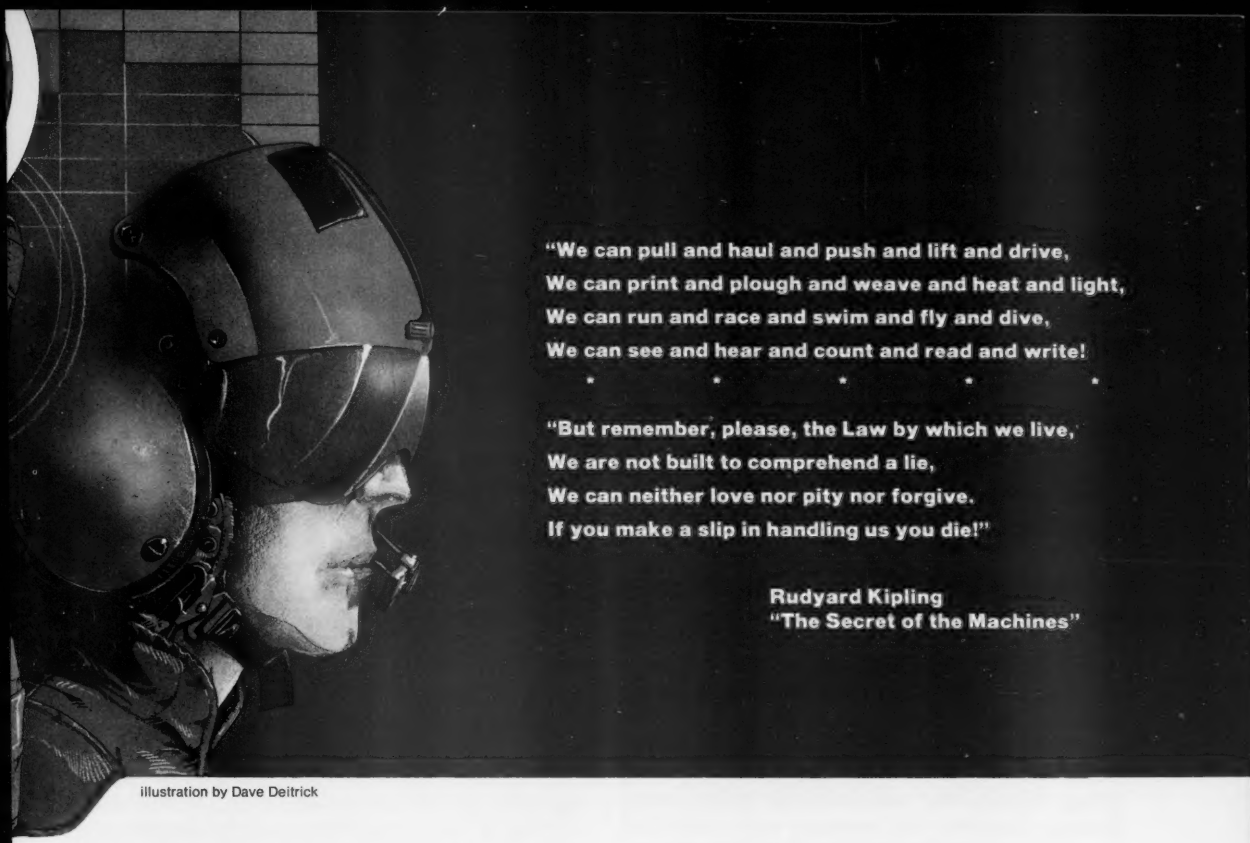
Mishap investigation is a wide and extremely complex field. The findings of a great many investigations are frequently, by necessity, tentative. "The probable cause . . ." is the most frequent term. This is true in the field of hardware, but it is even more true in the field of "liveware"—that is, in that a high proportion of mishaps are reportedly caused by pilot error.

The human factor in flying safety has been closely studied in the last 20 or 30 years and the findings have greatly increased flying safety. But, a great number of mishaps are still attributed to pilot error, a finding per se that cannot lead to prevention. Pilots are human; and judgment will continue to play a part until we make machines and outline procedures that eliminate the propensity for human responses based on judgment. This fact cannot, however, be used as an excuse. We must continue to strive for error-free flying, and we need to identify and correct all factors that cause us to make these errors.

Everyone has heard the old saying, "If God had wanted man to fly He would have given him wings." Well, He didn't give us the physical structure to fly, but He did give us the next best thing—the human intellect and capability to advance our technology to the point where we developed and manufactured our own wings.

The sky is a relatively new environment to man. On 17 December 1903 man first made practical use of his manufactured wings. The length of that first powered flight was 540 feet and lasted about 12 seconds; it was a successful attempt to make use of this vast three-dimensional potential—and remain alive! Since the day of the first Wright Flyer, our aircraft have grown larger, they fly higher, faster and farther.

In the more than 79 years since that first successful flight, our technology has advanced



"We can pull and haul and push and lift and drive,
We can print and plough and weave and heat and light,
We can run and race and swim and fly and dive,
We can see and hear and count and read and write!

* * * * *

"But remember, please, the Law by which we live,
We are not built to comprehend a lie,
We can neither love nor pity nor forgive.
If you make a slip in handling us you die!"

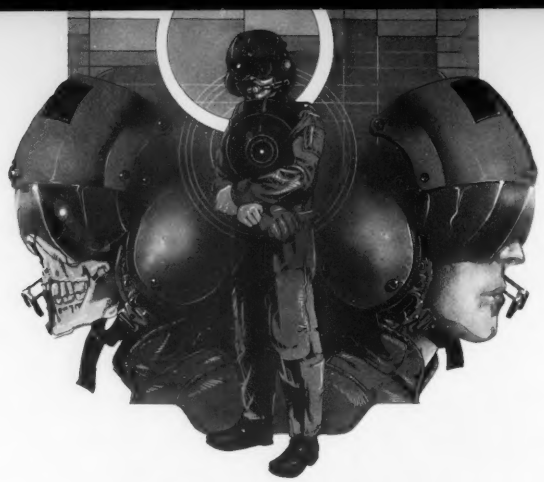
Rudyard Kipling
"The Secret of the Machines"

illustration by Dave Deitrick

to the point where we can carry, in comfort, 300 passengers from New York to San Francisco, at speeds exceeding 500 miles per hour. Aircraft can, by the use of highly sophisticated onboard computers and navigational equipment, literally fly themselves from takeoff to landing. But, for every advancement that has been made, more challenging problems of aviation safety have evolved. The early accident rate was phenomenal. During the two World Wars, 60 percent or more of all air casualties were attributed to accidents, not to enemy action. Engines failed, airplanes collided and we had few reliable instruments; pilots had little training and often became lost or disoriented. It was becoming increasingly obvious that people were not "born to fly" but we certainly were not about to admit it. We had entered into a new environment and fully intended to take advantage of its almost limitless possibilities.

The pilot's environment is a special one; his responsibility as pilot in charge is awesome. The pivotal point of an aircraft is the pilot, around whom everything else rotates. Before climbing into an aircraft the pilot has received and interpreted a weather briefing, filed a flight plan, briefed his crew and passengers, computed weight and balance, and thoroughly checked the aircraft for deficiencies. In fact, the pilot has signed for everything and everyone onboard. Once he takes off, he releases all those he has left behind of any further responsibility. He is solely responsible to make immediate, precise and accurate judgments every second of the flight. If there is to be a human error accident, he is the one who will most certainly make the mistake. Even more certain is the fact that he will also take the blame. Every time the pilot flies he must feel the weight of this responsibility and understand the factors involved.

There are a great many elements involved with the pilot and his selected profession. First, the process for his selection and training to become a pilot have left many other candidates by the wayside. Prior to selection he is checked for physical conditioning and his physiological and psychological makeup. The standards set for the aviator far exceed those of most other professions. His training is extremely intense and difficult. Once he qualifies as an aviator his performance and condition are continually monitored.



Pilot error

On first meeting him, few people would guess his profession. Only around his "own kind" does he open up and then the conversation will more than likely be about flying. In personality he is apt to be an intuitive extrovert. That is to say he will not analyze himself or his motives, but he will be extremely critical of and go over and over in his mind any minor mistake he may make while flying. The aviator will normally be of above average stability and possess more than the average amount of common sense. He will be careful, conscientious and, in all probability, "over cautious." He will remain aware of the possibility of accidents, and that his whole existence is the need to avoid them.

The cockpit is the pilot's office from the time he straps in—he becomes the principal, with one or more crewmembers to assist him. He assumes immediate and full responsibility for an expensive aircraft and X number of passengers and crew and the successful completion of the assigned mission.

He now has to start making very important decisions on which the safety of all people onboard will be dependent. Some decisions can be made at an almost leisurely pace such as is the weather good enough to maintain minimums or is the aircraft serviceable? The majority of his decision-making, however, takes place in the air and he no longer has the option to make leisurely decisions. Most have to be made immediately. Some are even made a matter of conditioned reflex by hours and hours of repetitious training as in emergencies such as fire, engine failure or other hardware failures. An example is the instinctive reaction of a helicopter pilot who suddenly and unexpectedly loses engine rpm to reduce collective pitch to maintain rotor rpm and then to identify the reason for loss of engine rpm. These decisions have to be made and made correctly if a safe flight is to be accomplished. These decisions can never be postponed as some can in a ground job. There are few professions where such a series of decisions must be made correctly and often instantaneously. The end result of making the wrong decision can be disasterous. Decisionmaking is known to be stressful and with the rapid advance in aviation technology, far more stressful factors have been brought into play.

Aircraft today are larger and increasingly complex. The advances in aviation human engineering have been fantastic, but with increased aircraft complexity the modern pilot is under more stress than ever. Through use of current technology we have the capability to greatly reduce stress and pilot workload, if we're willing to accept the additional cost.

In his "office" the pilot may spend several hundred hours a year. Considering the stresses that are imposed on its principal occupant, it would be expected that a great deal of care should be used in the design of the cockpit. The seats should be comfortable and easily adjustable. The instruments should be arranged in an array making them easy to read and interpret. All controls, levers, knobs, dials and switches should be arranged logically and their functions should be positive, easy to operate and guarded against their inadvertently being put in the wrong position.

The operating environment of most aircraft leaves a lot to be desired. The pilot has to fit himself among a myriad of switches, controls,

levers and dials—and adjust himself as best he can. Modern aircraft contain hundreds of gauges and switches and their positions and functions have to be nearly committed to memory. To the layman, this mass of equipment is unfathomable, but to the pilot they are old and familiar friends. Instruments can, however, be misread. For example, in 1972 a commercial DC-9 crashed during an approach to the Charlotte, NC, airport. The captain and copilot both misread their altimeters by 1,000 feet! They thought they were at 1,650 feet but were actually at 650 feet, well below published minimum obstacle clearance altitude for that portion of the approach.

The number of aircraft a pilot is rated in is also a factor. Habit patterns learned in one aircraft may be transferred subconsciously to another. These "habit pattern transfers" most often end in immediate recognition and correction but sometimes they end with tragic results.

Habit pattern transfer accidents are greatly reduced by the extensive training involved when transitioning from one aircraft to another, plus the use of checklists, continuation training and currency requirements that are imposed after initial aircraft qualification is accomplished. No other profession has anything similar to the continued training, retraining and checks experienced by the pilot throughout his career.

Only about one-third of all so called pilot error accidents can be attributed to lack of professional skill. Two-thirds are more likely due to ordinary *human* failings in a highly stressful situation requiring immediate response. These human failures can be attributed to:

- peer pressure
- the desire to please
- stress
- personal problems
- misleading visual cues
- "get-home-itis"
- fatigue
- and many other variables.

The purpose of this article is not to attempt a total explanation or to offer excuses for human error accidents. Machinery can fail and most certainly humans can fail, and either one or a combination of both can result in tragedy. The purpose is to remind us of the many human aspects involved in flying. Our knowledge and realization of the impact of these elements can accomplish nothing less than improve our flying safety and make us better professionals; the end result being safer, more efficient service to those we in aviation support.

ABOUT THE AUTHOR

SSG (P) Hawkins is currently serving as the noncommissioned officer in charge, Lowe Division, Department of Flight Training at the U.S. Army Aviation Center, Ft. Rucker, AL. He has been involved in aviation safety in every assignment since 1976. He is also a civilian pilot with about 1,000 hours of experience. He has served overseas tour in Vietnam, Germany and Korea.

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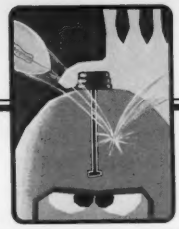

Editor:

Request reprinted copies of the following articles on NBC defense:

- "Chemical Protective Clothing," October 1980.
- "Nuclear, Biological, Chemical Training and Development," August 1981.
- "Nuclear, Biological, Chemical Decontamination Problems," October 1981.
- "Chemical Agents, First Aid and Long-Term Effects," December 1981.

Request any other articles on NBC defense in your current files.

CPT Michael Parker
Command Chemical Officer
4th Transportation Command
APO New York

Editor:

Reference: *Aviation Digest* April 1982, "Heliborne Electronic Warfare System" written by COL Robert S. Fairweather Jr.

As a tactical electronic warfare officer and an aviator flying "GUARDRAIL V," I read with great enthusiasm COL Fairweather's article on HEWS. Without a doubt the potential for such a system could be a tremendous force multiplier while providing much needed protection for aircrews. As also stated in the article the Air Force is actively involved in EW supporting roles. Equally akin to the "Wild Weasel" is the EF-111, an airborne jamming system that protects and screens penetrating fighter bombers. A system envisioned by COL Fairweather would provide a tremendous advantage on the battlefield.

Having been in the EW business for several years has given me great respect for what electronic warfare can accomplish. I am still surprised that more emphasis is not placed in this area. In many exercises I have participated in, EW units have had to be stopped or greatly reduced as it disrupted the exercise. When communication is disrupted and command posts dislocated, great confusion and frustration occurs. Anytime units must operate out of the normal mode of operation their ability to conduct their mission is greatly reduced. The Soviets are extremely susceptible to an EW threat. Jam the radar on the ZSU-23-4 and we have greatly reduced its ability. Jam command, control and communications (C3) and we arrive with the fourth "C," confusion.

Another "plus" for the HEWS concept is the survivability of the jammer. The Soviet determination to eliminate tactical jammers is well known. The only hope for our ground tactical jammers is short burst rapidly moving jamming. The value of having airborne jamming capability has been proven by both the Quick Fix and CEFIRM Leader platforms. The next logical step is to miniaturize and expand these capabilities to provide standoff, handoff, multiple role airborne jammers as envisioned by COL Fairweather.

There is one more major concept I would like to see added to HEWS and that is supportability. I am a strong believer in delivering EW capabilities to the tactical commander as it is a powerful weapon. However, supporting electronic warfare operations is a personnel and logistical nightmare. The low density demand for personnel and equipment is a constant strain for all tactical electronic warfare units. Currently, I doubt that a division could support a system such as HEWS. To support this system, equipment and personnel should be identified prior to fielding. In order to have an effective airborne EW platform the receiving organization must be prepared to receive the system and thus be able to support it. In other words have personnel, equipment and logistical support on hand prior to receiving any new EW system.

The HEWS concept is exciting to think about. Such a system is a necessity and would greatly enhance combat operations . . . "Jam It!"

CPT Thomas K. Beaty
Flight Operations Officer
330th Electronic Warfare Co. (FWD)
APO New York

Editor:

I am interested in the *Aviation Digest* and would like to know its annual subscription fee in Canadian dollars, if possible.

As a Canadian citizen I have been specializing in military strategy and technology over the past 20 years in North America. Your early reply will be appreciated.

Leo Y. Liu, Ph.D.
Chairman & Associate Professor
Department of Political Science
Brandon University
Brandon, Manitoba, Canada

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Patricia L. Luttrell
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U.S. Army Communications Command
ATC ACTION LINE

Lost Communications: Filing Fact Or Fiction

CW4 Peter C. McHugh
U.S. Army Air Traffic Control Activity
Aeronautical Services Office
Cameron Station, Alexandria, VA

ANNUAL AVIATOR proficiency and readiness test completion includes the evaluation of aviator ability to cope with failure of communications and equipment during IMC. Despite dramatic advances in technology and increased reliability, the suggestion that "lost comm" implies loss of navigational ability focuses much training to this potential emergency. Attention is directed to inconsistencies between Federal Regulations, DOD FLIP and Army flight plans during such evaluation and training.

Lost comm procedures in DOD FLIP Flight Information Handbook (FIH), section A, paragraph 4, paraphrase FAA instructions in FAR 91.127. The FIH amplifies the methodology of making the descent from en route altitude, but as the FAR requires, "Begin descent from the en route altitude upon reaching the fix from which the approach begins, but not before . . . the estimated time of arrival, shown on the flight plan, as amended with ATC." There is a common misconception that amending ETA with ATC is always precipitated by the pilot. DD Form 175, Military Flight Plan, does not have an ETA entry despite references to the contrary. An ETA only exists after the flight movement message is transmitted (AR 95-11), and for every IFR flight that does not launch precisely on the proposed departure time, an amended ETA exists with ATC. It is possible that differences of 3 to 10 minutes or more could exist between actual ETA and that perceived by the pilot.

Until January 1982, this discrepancy was compounded by a significant difference between civil and military computation of estimated time en route (ETE). FAR 91-83 requires that the flight plan include "the point of departure, the point of first intended landing and the elapsed time until over that point." DOD FLIP GP 4-2, item 15, prior to January 1982, described ETE as "time from takeoff to the last fix shown in the route of flight." The last fix shown (item 13), of course, was the IAF for the intended approach. Since some IAFs are geographically separated from the supported airfield by extended distances (40 + NM), a 90-knot aircraft's transmitted ETA (in no wind) grossly misrepresented actual time of arrival (ATA) to the FAA.

The fact that many of the Army's IAFs are not stored in the FAA computer system caused flight plan rejection and further exaggerated the disparity of ETE definition. This, coupled with the questionable value of divergence from the FAR by compliance with the FLIP GP, precipitated changes reflected in items 13 and 15. Item 21 will reflect these changes to show distance from "point of departure to the destination aerodrome via the planned route of flight." While the Air Force continues to exercise its prerogative to establish procedures for its own assets, the Army and Navy flight plans are now compatible with FAA expectations and current civil filing practices.

Using these procedures, an Army aircraft under lost comm will normally arrive at the IAF before the amended ETA, thus necessitating holding. FIH 4a(1)(e)4 provides that "if more than one approach fix is available, the pilot may choose the one most appropriate for the situation, as ATC protects airspace at all of them." Aeronautical Services Office (ASO) suggests that aviators consider selecting the IAF closest geographically to the destination when lost comm is of primary consideration. This will minimize the time lapse between ETA, ATA and time at which descent can begin.

The FLIPs often contain wording which becomes the subject of lively conversation and debate. Comm Cards providing comments, recommended rewording and phone number for follow up are earnestly solicited. ASO is Army Aviation's access to the DOD FLIP.

Readers are encouraged to address matters concerning air traffic control to:
Director, USAATCA Aeronautical Services Office, Cameron Station, Alexandria, VA 22314

When it's not right...

1. DATE	2. MODEL CH-47	3. SERIAL NO.	4. NAME OF CREW CHIEF OR MECHANIC	5. STATION	6. PAGE NO.	6a. NO. OF PAGES

7. STATUS TODAY					8. AIRCRAFT TIME		9. NEXT INSPECTION	
AIRCRAFT		ELEC-TRONIC	ARMA-MENT	OTHER	TIME TO DATE		INTMED NO.	
1	4				TIME TODAY		PE. NO.	
2	5				TOTAL TIME		OTHER	
3	6							

	a. HOT STARTS		b. LANDING	c. OTHER
	NO. 1 ENGINE	NO. 2 ENGINE		
10. PREVIOUS				
TODAY				
TOTAL				

11. FUEL (GALS. OR LBS.)				12. OIL (QUARTS)					13. OXYGEN (PSI)	14. ANTI-ICING FLUID (GALS.)	15. SERVICED	
SERVICE	GRADE	ADDED	TOTAL IN TANKS	GRADE	ADDED NO. 1 ENG	TOTAL IN TANKS	ADDED NO. 2 ENG	TOTAL IN TANKS	APU			BY	STATION
1													
2													
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TOTAL													

UF STATUS	17. FAULTS AND/OR REMARKS	18. ACTION TAKEN	19. SIGNATURE
D	FLT #1 - Suspect #2 Engine Trim malfunction P. Pilot	Rem. #2 Engine Trim switch (see write up below)	J. Doe
X	Removed #2 Engine Trim switch FLT #2 OK P. Pilot	Replaced #2 Engine Trim switch INSP'D OK J. DOE T1	J. Doe

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